

190. The establishment in Satara was also engaged in the preparation of three water-supply schemes. That for the town of Islampur, which has a population of 5,000 persons, in the Walwa Taluka, had been previously investigated, and was undertaken as a relief work. It consists

Islampur Water-supply. of a reservoir capable of containing 25 millions of cubic feet, formed by an earthen dam, 2,892 feet long, and 30·97 feet in maximum height, situated a mile south of the town of Islampur. The water is to be conveyed to the town in an open channel. No distribution is provided for, and the intention of the scheme is merely to keep the existing tanks and wells in the town well supplied. The area of the catchment basin is 2½ square miles, and the minimum rainfall is 20 inches. A waste weir, 200 feet long, is provided for the escape of floods. The work had made good progress by the end of the year, and will be finished before the rains set in. Estimated cost, Rs. 43,227; expenditure, Rs. 23,205.

191. A site for a tank was also selected above the town of Jath, for the water-supply of that place, which has a population of 3,100; the drainage area is 2·2 square miles. The tank will contain 19 millions of cubic feet. The dam is of earth, 1,500 feet long, and with a maximum height of 38·70 feet. Estimate, Rs. 31,822. The work has been commenced. The expenditure is to be met from a loan granted to the State.

Mullal Tank. Jath Water-supply. 192. Projects for the water-supply of Satara were under investigation at the beginning of the year, but the pressure of relief works prevented the scheme approved of being matured.

193. **Shola'pur.**—The terminal portions of two of the canals, leading from this tank, were in progress; with the exception of masonry heads to distributing channels, this work is otherwise entirely complete.

Ekrak Tank. The area under command during 1876-77 was 11,520 acres. At the commencement of the year the water in the tank stood at 32·60 feet above the sill of sluice of the low-level canal. There was practically no replenishment, and on 31st March 1877 the water stood at 19·52 feet above the sill of sluice. The rainfall of the year was 9·92 inches, and it was distributed in such a way as to cause practically no run off. The work irrigated an area of 1,643 acres. This is largely in excess of areas in previous years. It would have been much larger, but for the poverty of the ryots, and their inexperience of irrigation. The work was instrumental in preventing severe distress for drinking-water in the large town of Sholapur. It is not stating too much to say that, had it not been for this work, it would have been necessary for the majority of the population to have deserted the town. The population is about 50,000, and there was no other source of supply. The low-level canal flows close past the town. The maintenance of the work cost Rs. 7,175. Estimate, Rs. 9,74,465; expenditure, Rs. 9,49,534.

194. This work is similar in character to the Ekrak Tank, though smaller. Plans and estimates were first prepared in 1869. The work is situated on the left bank of the Bhima. The design is for an earthen dam, 12,709 feet long, with a maximum height of 57·75 feet, thrown across the valley of the Ashti Nala, and forming a reservoir which, when full, will have an area of rather more than 4 square miles, and will contain nearly 1,500 millions of cubic feet. The escape of flood water is provided for by a waste weir, 800 feet long, on the right bank. From the reservoir two canals are to be led off, one on the left bank, 18½ miles long, and the other on the right bank, 11 miles long. The area of catchment basin is 92 square miles. The tank will protect an area of 13,324 acres.

The work has made considerable progress. The puddle trench has been excavated, and the dam, for a length of 2,650 feet, has been completed, with exception of pitching. The remaining portion of dam, and the excavation of the waste weir, is in progress. Estimate, Rs. 5,55,418; expenditure, Rs. 52,184.

195. This scheme was originally investigated in 1869-71, but was not at that time matured on account of part of the land under command belonging to His Highness the Nizam. The drainage area of the river above the tank site is nearly 300 square miles. The tank is designed to be formed by an earthen dam, 15,100 feet long, and 77 feet in maximum height. The flood waters are to be allowed to escape over a weir, 1,500 feet long, on the right bank. The tank, when full, will have an area of 9 square miles, and will contain 4,391 millions of cubic feet. Two canals are to be led from it, which will command together an area of 60,000 acres. The entire scheme is estimated to cost Rs. 17,27,419.

The work was under further survey during the year, with a view to its commencement for relief purposes. An expenditure of Rs. 1,952 was incurred on it.

196. In this collectorate water-supply works for the towns of Bársi and Karmala were in progress in this department. The Pandharpur water-works were maintained, and a diversion of a nulla, designed to increase the catchment basin of the new tank from 5 to 10 square miles, was undertaken. The expenditure was Rs. 17,984.

197. The Bársi works consist of a tank, designed to contain nearly 19 millions of cubic feet, in the immediate vicinity of the town, with a masonry outlet. The population to be supplied is estimated at 23,560. The drainage area of the tank is $1\frac{1}{2}$ square miles. Estimate, Rs. 28,360; the expenditure was Rs. 20,666.

198. On the Karmala water-works Rs. 2,346 were expended in the repair of the well, from which the supply is drawn, and the laying of a line of earthenware pipes from the fort to the town.

199. **Kala'dgi.**—The reconstruction of this work was undertaken as a relief work.

Begum Tank. It is an old tank designed for the water-supply of Bijápur, and, when restored, will contain 82 millions of cubic feet. The drainage area is 3.88 square miles, and the average rainfall 17.81 inches. The estimate provides for the repair and clearance of the old aqueduct leading from the tank to Bijápur. Estimate, Rs. 69,215; expenditure, Rs. 607.

200. **Poona.**—The masonry dam at Kharakwála has been raised on an average to reduced level 254.57, or 6 inches below its full designed height.

Mutha Canal. The parapet to the dam was in progress. The earthen embankment in rear of the dam on both banks was nearly completed. The waste weir has been raised to reduced level, 239 in highest part near the dam, or 5 feet below full designed level, and at the opposite end the foundation has been extended, and the work raised to reduced level, 231.00. During the monsoon of 1876 the highest flood in the tank rose to reduced level 241.88, or 5.37 feet below the top of the dam, and 7.88 feet above lowest part of the waste weir, as they then stood. Calculations show that, with these conditions, and taking the weakest section of the dam, the resultant of all the forces cuts the base 22.12 feet from the outer edge (the whole width being 57.30 feet), and that the pressure on the outer toe was 107.5 lbs. per square inch. The section taken in these calculations is not the same as that referred to in last year's report, which has, in the meanwhile, had the addition of the earthen embankment, referred to above, made to it.

The canal on the right bank has been completed to the 28th mile. The excavation and the masonry works, as far as the 38th mile, were nearly completed. The water had been passed down the canal as far as the 30th mile. The excavation, as far as the 57th mile, was in progress, and afforded employment for relief labour. The line, as far as the 64th mile, had been laid out and lock-spitted. Eighteen new outlets for irrigation, as far as 30th mile, were constructed.

The left bank canal earthwork, as far as the barracks at Kirkee, was completed, and that of the tail branch to Awund nearly half completed. The masonry works on the canal, as far as Kirkee, were nearly completed.

Some further progress was made with the distribution arrangements in Poona. The completion of the high service distribution awaits that of the pumping arrangements, which were in progress.

At the commencement of the year the water in the reservoir stood at reduced level 226, or 11 feet above the sill of the canal sluices. Before the first replenishment the water had fallen to reduced level, 220. On 17th June the water commenced to rise, and on 2nd July it rose to above level of waste-weir crest. From 1st October it commenced to fall, and on 31st March 1877 it stood at reduced level 225.85, or 10.78 feet above sluices, i.e., at almost precisely the same level as on the same date in the previous year. The area of land under command of the open portion of the canal was 15,000 acres, of which 2,024 were irrigated. The canal had not been extended as far as the districts which suffered most from distress. The maintenance of the work, including that of distribution in Poona, cost Rs. 18,744.

This work, when complete, will protect an area of 147,000 acres. Estimate, Rs. 46,83,951; total expenditure, Rs. 42,07,650.

201. The Kasurdi Tank was maintained at a cost of Rs. 134. It irrigated 123 acres of land.

202. The Pashan Tank and Kirkee water-supply works were maintained at a cost of Rs. 1,285.

203. This work was commenced as a famine relief work in November, and was completed in February. It consists of an earthen dam across a gap in an old embankment, thrown up from the excavation for a small tank executed very many years ago. Estimate, Rs. 2,328; expenditure, Rs. 2,201.

204. The site for the Matoba Tank was originally selected and surveyed in 1864, when the investigation as to the best and most economical means of irrigating the Deccan, whether by small isolated works, or by large canals, drawing their supply from the main streams, was in progress. Complete revised plans and estimates were drawn up as soon as the necessity for relief works became known, and the work was commenced in December. The tank is situated about 28 miles east of Poona, in a district where the rainfall is always light, and often uncertain.

The design is for an earthen dam, 6,095 feet in length, with a maximum height of 48.41 feet. The total capacity of the tank is 229 millions of cubic feet, and the area of contour of full supply is 477 acres. The tank is under the Mutha Canal, and will be supplied partly from its own catchment, which is 10 square miles in area, and partly from surplus monsoon water of the canal. The work protects an area of 12,412 acres.

About one-third of the earthwork of the dam has been completed, and the puddle trench has been excavated and filled in. Stone for pitching is being collected. Estimate, 1,61,143; expenditure, 24,438.

205. First proposed as subsidiary to the original high level Mutha Canal in 1864-66. Complete plans and estimates for this work were prepared during the year for execution as a famine relief work. The site is situated 50 miles east of Poona, where the rainfall, as at Yewat, is capricious and uncertain, and irrigation works are a great want. The design is for an earthen dam, 2,188 feet in length, and 51.38 feet in maximum height. The contents of the tank are estimated at 369 millions of cubic feet, and the area of contour of full supply level at 834 acres. The drainage area is 22 square miles.

Provision for a distributary is included, and it is estimated that the work will protect an area of 9,000 acres.

Work was commenced in February, and about one-fourth of the earthwork has been finished. Estimate, Rs. 1,51,860; expenditure, Rs. 13,338.

206. Was commenced in January as a relief work, and the earthwork was about one-fourth completed before the end of the year. The tank is a very small one. The catchment area is 4.13 square miles, and the design is for an earthen dam, 2,900 feet long, and 29 feet in maximum height, impounding 15 millions of cubic feet. A waste weir, 170 feet long and an outlet are provided for. Estimate, Rs. 31,558; expenditure, Rs. 5,658.

207. This scheme is very similar to the Shirsuphal Tank in character and circumstances. The site is in the Indapur Taluka, 60 miles east of Poona, and was surveyed, and complete plans and estimates were prepared during the year with a view to the work being required for relief.

The design is for an earthen dam, 2,725 feet long, with a maximum height of 5½ feet. The tank, when full, will have an area of 336 acres, and will contain 223 millions of cubic feet. The drainage area is 30 square miles. The average monsoon rainfall of the district is 12.86 inches, and average total fall 19.28. The tank would, it is calculated, just fill with the average monsoon rainfall. The work will protect an area of 2,900 acres between the tails of the Mutha and Nira Canals. Its estimated cost is Rs. 1,34,551.

208. The project for this canal has been under investigation for several years. Complete plans and estimates were drawn up in 1871, and the principal features of the scheme are described in the annual report for 1873-74. A first section of the work has now been undertaken as a relief work. It consists of a canal with a carrying capacity of 455 cubic feet per second at the head, 129 miles long, commanding 279,680 acres. The head-works are at Vir on the Nira, and the canal terminates above the town of Indapur, commanding the whole area between the Bhima and Nira at that point. The annual rainfall in this tract is so uncertain and capricious, that there is frequently a failure of crops for several years in succession, and it is with reason termed a drought-stricken district. In the settlement reports it is stated that, owing to want of rain, "a good average crop every other year is too liberal an allowance as an average of the general run of seasons. From the jamabandi reports it would appear that the cultivators get a good crop about once in three years; that of the other two, one is a year of almost complete failure, and one of middling crops only."

The work presents no extraordinary difficulties; the country is rough, and in some places the canal is expensive, and the course tortuous. The head-works consist of a weir 2,290 feet long, with maximum height above the river bed of 43 feet. The foundations are on solid rock. The largest cross drainage-work is that on the Kurra River, an aqueduct of 20 spans of 30 feet each.

Work was commenced in February, and the excavation of the canal was in progress for a length of 14 miles from the head. Estimate (1st stage), Rs. 16,64,873; expenditure, Rs. 30,710.

209. **Ahmednagar.**—This work is almost entirely completed. It protects an area of 4,961 acres, of which 339 acres were irrigated. The maintenance cost Rs. 548. Estimate, Rs. 2,63,986; expenditure, Rs. 2,58,843.

Bhatodi Tank.

210. This work was maintained at a cost of Rs. 2,299. It protects an area of 24,000 acres, of which 1,200 were irrigated. This is largely in excess of the area irrigated in any previous year. The rainfall was 12.47 inches. Estimate, Rs. 2,57,543; expenditure, Rs. 2,46,484.

Lakh Canal.

211. The remaining masonry works on this canal were completed, with the exception of upper portion of parapets, which were omitted to serve as escapes. The canal is entirely complete to the 10th mile, the sanctioned terminus. It protects an area of 4,408 acres, of which 1,308 acres were irrigated. The maintenance cost Rs. 1,176. Estimate, Rs. 1,54,308; expenditure, Rs. 1,42,688.

Ojhar Canal.

212. An extension of this canal, 10 miles in length, was commenced as a relief work, and a considerable portion of the earthworks were completed before the end of the year. The extension will protect an area of 17,528 acres, in which the average rainfall is under 20 inches. In 1876 the fall was 8.57 inches. The whole canal, when complete with extension, will protect 21,936 acres, and the experience of the past year, when nearly one-third of the whole area under command was irrigated, seems to indicate that the people will avail themselves at once of the water. Estimate, Rs. 89,148; expenditure, Rs. 6,311.

Ojhar Canal extension.

213. **Nasik.**—This canal protects an area of 20,000 acres, of which 508 were irrigated during the year. The maintenance cost Rs. 1,918. The work is complete, with the exception of masonry heads to distributing channels. Estimate, Rs. 1,40,291; expenditure, Rs. 1,32,090.

Palkheir Canal.

214. The Wadali and Ojhar-Tambat Canals were maintained at a cost of Rs. 138. They protect 3,412 acres, of which 243 were irrigated.

215. An expenditure of Rs. 20,078, of which Rs. 6,232 were from villagers' contributions, was incurred in repairs to old works in Nasik as follows:—

EXPENDITURE.			
	Government.		Contributions.
	Rs.		Rs.
16 works on Girna River	8,726	}	6,232
9 works on Musum River	2,240		
15 works on Godavari River	2,880		
	<u>13,846</u>		<u>6,232</u>

216. Some further progress was made with the survey and investigation for the Chankapur and Waghad Tanks, but from press of relief work, plans and estimates were not completed. The outlay on survey and trial pits was Rs. 2,451.

217. **Khandesh.**—General repairs to 14 old works were executed at a cost of Rs. 8,381, of which Rs. 4,574 were from contribution as follows:—

	Government.		Contributions.
	Rs.		Rs.
9 works on Upper Panjhra River	1,461	}	4,574
2 works on Bori River	166		
1 work on Bichan River	645		
2 works on Burai River	1,585		
	<u>3,857</u>		<u>4,574</u>

218. The Jamda Canal was maintained at a cost of Rs. 4,148, including cost of plantations and sub-division of survey numbers. It protects an area of 25,600 acres, of which 1,529 acres were irrigated. The water-supply was abundant, and the canal flowed throughout the year.

219. This work is now entirely complete, with the exception of the masonry pavings to waste weirs. It protects an area of 9,826 acres. The water-supply in the river fell to below the requirements on 31st October, from which date to 24th January it was supplemented from the tank. Rs. 861 were spent on the repair of four of the bundaras and channels on the Lower Pánjhra, which form the distributaries of the Mukti Reservoir. Estimate, Rs. 2,64,566; expenditure, Rs. 2,60,760.

220. The work on this tank consisted in the construction of a channel to increase the drainage area. The tank commands an area of 527 acres. It is situated in a very dry district near Bhosáwal, and its supply is uncertain.

During the year the rainfall was 9.54 inches, and the water rose only 2.70 feet over the sill of the sluices. The area irrigated was 39 acres. Estimate, Rs. 32,871; expenditure Rs. 31,728.

221. This tank was practically complete at the end of the year. Progress was somewhat delayed owing to the financial pressure in September, but on 31st March the embankment and pitching had all been completed, with the exception of upper portion of the earthwork of the gap left in the centre for the escape of floods during construction. The outlet sluice was completed. The channels leading from the tank were in progress. The work will protect an area of 2,060 acres. The tank will have an area of 421 acres, and will contain 159 millions of cubic feet, when full. Estimate, Rs. 1,00,860; expenditure, Rs. 56,678.

222. Some further levels required were taken for the Dhywell Tank, and some trial pits were excavated, to determine the position of the rock. Trial levels for a tank at Bilwadi were run, but, as it did not promise well, it was abandoned.

Tapti Canal.

223. **Surat.**—This project is in abeyance for the present, the sanction of the Government of India not having been accorded to it.

224. The area originally proposed to be protected is embanked and completed. Some further works are proposed to protect a small additional area, the cost to be met from savings on the original estimate. Estimate, Rs. 41,102; expenditure, Rs. 35,631.

225. A sum of Rs. 2,732 was expended in the repair of three tanks in Surat.

226. **Ahmedabad.**—This canal, with the exception of distribution arrangements, is now complete. Twenty-one miles of distributing channel were made, or in progress. The area irrigated was 1,386 acres, out of a total area of 34,068 acres commanded. There is considerable percolation from the canal, which, it is hoped, however, will gradually cease. Meanwhile it serves to enable the people to grow rabi crops without paying water-rate. This was availed of to the extent of 503 acres, and the percolation, moreover, enabled the ryots to grow a higher class of crop on an area of 2,657 acres in hollows below the canal, where rabi crops were formerly grown.

227. The maintenance of the canal cost Rs. 4,062. Estimate, Rs. 3,84,705; expenditure, Rs. 3,54,592.

228. Three new sluices across the river, or its branches, have been built, and a new channel, or Rajbaha, about a mile long, has been excavated. Estimate, Rs. 27,229; expenditure, Rs. 22,574.

229. Three old tanks were repaired in the Ahmedabad Collectorate at a cost of Rs. 3,028.

230. An expenditure of Rs. 832 from contribution was incurred on investigations for the water-supply of Dholera. The scheme is in preparation.

231. A preliminary examination and partial survey has been made for works to protect lands of His Highness the Gaekwar in the Kadi purgana. The expenditure, Rs. 1,042, was met from contribution.

232. The Bokh reservoir and Khari cut sluices were in abeyance, owing to the want of establishment, which was all required for employment in the Deccan on relief works.

233. Gauges of river discharge and rainfall were maintained, as usual, throughout the Deccan and Guzerat.

234. Desert Canal Division.—Owing to the suspension of work in this division—*vide* Government Resolution No. 168 C.I.—495 of 1876—little could be done. The work on the stop-gate bridge at Drukkhan

Desert Canal. was suspended when near completion, and was not resumed till March. The excavation of the desert portion of the canal was completed early in the inundation, and the canal was opened on the 12th of June. It worked well, and the result of the season was favourable. The mouth of the canal itself has silted up very little, and no change in its position has taken place; but the condition of the Dhund is critical, and unless the river comes back, it will silt up, so that probably a fresh cut must be made to the river at a considerable expense. Measures on a small scale are being now adopted to induce the river to maintain a channel through the Dhund, but the result cannot be known till the close of the inundation. The floods, land and river, did no damage to the works this year; the maintenance charges have been low, amounting to only Rs. 2,563. Estimated amount, Rs. 8,34,811; total expenditure, Rs. 2,77,541.

235. The Sind Dhora sluice was completed by clearing away an obstruction in the channel leading up to it, and providing wales, and needles or baulks to the boat passage, so as to enable it to be closed during high floods.

Kashmor and Begari Bund. **236. The Mori Mari Bund** was raised and strengthened. Trees, to prevent the lap of the water on the face of the bund, were planted all along the foot of the slope. The out-houses and stores at the Badami bungalow were completed.

In the months of the inundation the bund was seriously breached in four places after which it was determined to repair it, as well as raise it and add certain improvements, with the view of preventing breaches for the future, the chief of which latter was the formation of a groin and cut at Tori, to turn the run of water away from the face of the work. These were nearly complete at the close of the year. Estimated amount, Rs. 7,48,145; total expenditure, Rs. 7,00,945.

237. Begari Canal Division.—The widening of the first 7 miles at the mouth has been completed down to the sill level, or about 3 feet over the correct bed; 29 miles of the bank on the south side of the canal, and 12 on the north side, are now completed.

Begari Canal. The head regulating sluice has been completed at about $\frac{1}{4}$ of a mile from the river (Indus) bank. It consists of 6 spans of 10 feet, and one boat passage of 15 feet, in all 75 feet of water-way. The material is brick. The total height of the sluice from pavement to springing is $18\frac{1}{2}$ feet, and the closing arrangement is vertical needles sliding between cross wales.

The original design for the foundations of this work was a concrete bed, but quicksand having been met, a change to wells was adopted, and proved successful; the wells are 8 feet deep and square in plan; the bed between the piers is protected from scour by a pavement of bricks, 2 feet thick.

The site of this sluice was originally chosen at $1\frac{1}{2}$ miles from the river, but it is now only $\frac{1}{4}$ of a mile, the river having eaten in. Last season the river set away again from the right bank, and now the canal is fed from a deep Dhund, and it is expected that all danger of erosion is at an end. The Kashmor and Begari Bund ends at this regulator, and the Mori Mari begins from below it. At the head of the Mirzawah (branch from the Begari at the 26th mile), a regulating sluice of 3 spans of 9 feet and 11 feet to springing, have been built. This also has been founded on wells.

Another regulating sluice has been built at the head of the Mirwah (a branch at the 38th mile). This has 4 spans of 5 feet and a 13-foot boat passage, with a height to springing of 10 feet. It is founded on concrete.

Trees were planted out and tended, and a large number are flourishing well, babu being found to be the most easily grown. Estimated amount, Rs. 10,49,424; total expenditure, Rs. 6,04,132.

238. Sukkur Canal Division.—The Rohri sub-division was added to this charge this year on the breaking up of the Kashmor and Begari Bund Division.

239. The Sukkur Canal, despite the effects of the floods, has worked well this year, and although want of funds prevents much activity in construction, the benefit derived from the work is great. The Rahuja mouth answered its purpose to the end of the inundation, and the scouring channel proved useful in reducing the silt bank in front of the low-level sluices. These latter sluices were opened, for the first time, during the Viceroy's visit to Sukkur, and the result in giving a good cold-weather supply was most satisfactory.

Sukkur Canal. General.

This bridge, described in last report, was completed before the inundation, and answers well. Estimated amount, Rs. 3,381; total expenditure, Rs. 3,324.

Work retarded from want of funds; abutments and wings brought up to springing. Estimated amount, Rs. 14,478; total expenditure, Rs. 9,672. Half cost of this bridge is debitable to Local Funds.

A similar work to the above also brought up to springing. Estimated amount, Rs. 17,592; total Rs. 16,476.

Also a similar work, and in a similar state of progress. Estimated amount, Rs. 14,478; total expenditure, Rs. 8,097. Half cost of this bridge is debitable to Local Funds.

This is to be a wooden bridge of 2 spans, of 15 feet each, supported on a masonry pier, in the centre of the canal, with 2 land piers. The piers are to be 11 feet high and $2\frac{1}{2}$ feet thick; the roadway is designed 8 feet wide, carried on 12 inches by 12 inches beams, 5 by 4 joists and 2-inch planking, 3-feet hand rail. The road on the approaches to be 12 feet wide at a gradient of 1 in 20. Materials for the work collected. Estimated amount, Rs. 1,542; expenditure, Rs. 771.

The removal of the remaining materials in the canal below the 4th mile was carried on in the hot weather, and progresses satisfactorily. Little silt remains, and the only accumulation of it that exists is due to the intrusion of the floods. Estimated amount, Rs. 4,92,114; total expenditure, Rs. 4,81,237.

The right spoil bank (Muksuda) has been strengthened opposite to the village of Urji Bhuta, where the left spoil was formed last year, and has proved successful in preventing breaches which were destructive last year. The top width is 8 feet, and slopes 2 to 1, and is 4 feet above full supply. Estimated amount, Rs. 37,689; total expenditure, Rs. 7,573. Also the right bank southwards for 4 miles near Ghoomra (11th mile), Sukkur Canal has been levelled and strengthened. The top has been cut down to 19 feet over canal bed level, the width is 20 feet, and slopes $1\frac{1}{2}$ to 1.

On the left bank the bund has been completed from the Gaheija Road Bridge to Faiz Daryia sluice. The length is about $1\frac{1}{2}$ miles, top width 6 feet, and height 18 feet over sanctioned bed level of canal. The side slopes are $1\frac{1}{2}$ to 1, and a 10-foot berm is left between the cutting of canal and toe of bank.

Considerable progress has been made in this work, and the plantations are thriving. Estimated amount, Rs. 10,84,388; total expenditure, Rs. 9,78,768.

240. This bund, intended to prevent the spill of the Indus floods on the left bank of the river, commences just above the mouth of the Eastern Nara Supply Channel, at the Girknawah left spoil bank, and runs north for 16 miles towards Ghotki, keeping as close as possible to the river, follows generally the old road to beyond the village of Janejani, where it turns off through the Government forest, passing in front of the villages of Khudkari and Teregani, and terminates at the mound on which stands the tomb of Pir Shah Oosman at Kassimpur. The earthwork of the bund was completed before last inundation. Its top width is 6 feet, slopes 2 to 1, crest 4 feet over ordinary floods. The sluices at the heads of the 6 canals, passing across the line of bund, are now in progress, and, it is hoped, will be completed before this inundation. This bund seems secure, as the head of water against it is small, and no Dhoras of any consequence exist in its neighbourhood. This bund was slightly breached last year owing to the failure of a temporary head to one of the Zemindari canals, but has been repaired. Estimated amount, Rs. 60,769; total expenditure, Rs. 52,492.

241. This work, according to estimates for its raising and strengthening, has been almost completed. The bund is now being constructed of the section as under: Top width 10 feet; side slopes 2 to 1; crest 3 feet above water line of last year's inundation (1876).

The serious breaches which occurred in this bund last year have been substantially repaired at a cost of Rs. 13,000. Estimated amount, Rs. 49,448; total expenditure, Rs. 38,576.

242. This bund starts in Municipal limits, at the end of what is known as the Bunder Sukkur and Sydabad Bund. Road, and follows the bank of the river very closely until it joins the Gurrung Canal near its tail on the river bank; the length of the bund in Municipal limits is 1 mile, and the Government bund from Municipal boundary to the Gurrung, $4\frac{1}{2}$ miles, making the total length $5\frac{1}{2}$ miles.

The following are the dimensions of this bund:—Width at top, 8 feet; front slope, 2 to 1; rear slope, $1\frac{1}{2}$ to 1; crest $3\frac{1}{2}$ feet above H. F. L. on river bank, the afflux allowed being 6 inches.

A regulating sluice has been built for irrigation just beyond the Municipal boundary.

Before the bund can serve its legitimate purpose of shutting out the Bagurji floods entirely, it is necessary to extend it to meet the Julli Bund in the 4th furlong of 1st mile. Estimated amount, Rs. 17,756; total expenditure, Rs. 15,910.

243. **Rohri Canal Division.**—No new irrigation works have been started this year, but several bridges over canals have been constructed at the expense of the Local Funds,

There is nothing remarkable about the work of this division, and the canals are in good order.

The Nowlucky surveys have made great progress.

Altering regulating apparatus, 30th mile bridge, Mithrau Canal.

244. **Eastern Nara Division.**—Sliding stop-gates were substituted for needles and horizontal wales, at a cost of, Rs. 948.

Regulating dams on the Dosa-wah, Mithrau Canal.

245. Owing to the presence of flood water, the tail dam could not be completed this year. Allotment, Rs. 1,359; expenditure, Rs. 451.

246. The construction of these heads having become necessary from the increased supply of water at the tail of the canal, the work has been completed, all but some of the woodwork. Estimated amount, Rs. 4,645; expenditure, Rs. 3,969.

Masonry heads to 7 Kurriahs on the Mithrau Canal.

247. This work, intended to obviate the heavy breaches caused at the junction of the canal and the Jullub Bund, has been completed. It is situated about 200 feet below the bund, the embankment being made down to it. Estimated amount, Rs. 8,330; expenditure, Rs. 8,233.

Regulating bridge at head of Dinwah.

Thar Canal.

248. The spoil banks, where affected by Kullar (salt), have been strengthened.

249. The Nara left bank bund, intended to protect the Thar Canal from floods, was under construction, but the work was delayed on account of the bank being under water for the greater part of the year. Expenditure, Rs. 9,801.

250. The object of this work is to facilitate the escape of the Nara floods to the sea. The order to start the work being received late in the working season (June), few work-people could be collected; but the Nara Gang of prisoners were employed, and being 300 strong, helped considerably to the close of the season (September). Expenditure, Rs. 6,732.

Excavating channel from head of Thar Canal to sea.

251. The work of cutting up of the survey numbers into irrigation numbers, to facilitate the measurements of the crops, is now nearly completed, and the maps are in progress.

The expenditure on this head for this year is Rs. 6,462.

252. Generally the Nara works suffered heavily from the floods this season, and much of the country was under water, so that the cultivation and land usually cropped were seriously injured. The usual and necessary precautions against floods were taken, and the excess of water was passed down the valley.

All the canals were maintained.

The Thar was closed, and the Mitrao maximum supply was 1,260 cubic feet a second. The set of the Nara at Jamrow, and below the Adhwanah, had to be met by lines of new bunds set back from the river bank.

253. Fulaili Division.—This work, the nature of which was explained in last report, was completed in August, and has been successful in stopping the erosion threatening the village of Talhar. Estimated amount, Rs. 6,646; expenditure, Rs. 6,410.

Improvements to the Guni at Talhar. Chowkey at Nindo Sher and Khorewah. 254. This, referred to in last, was completed in February last. Estimated amount, Rs. 4,719; expenditure, Rs. 4,327.

So also was that at Khorewah. Estimated amount, Rs. 4,719; expenditure, Rs. 4,568.

255. This work has for its object the prevention of waste of the water of the Manak Canal down the Lundo, the fall of the bed of which is greater than that of the Manak since its new mouth has been cut. The sluice is brick-work, having an opening of 10 feet span, and a height of 10 feet to springing. It is closed with wales and vertical baulks or needles. Estimated amount, Rs. 1,200; expenditure, Rs. 1,125.

256. Twenty-four sluices were constructed at the heads of Zemindars' Kurriahs, or distributing channels on the Guni Canal; half the cost was contributed by the Zemindars themselves. Also two on the Nusseer, on the same terms, and two entirely at the cost of the owners. Two others on the Kazia and Guni are in progress, and also are to be at the cost of the owners. Estimated amount, Rs. 6,270; expenditure, Rs. 4,688.

257. A plantation of babul trees in front of the sand drift, which threatened to destroy the channel of the Guni at Nuzzurpur, has been successful in saving the canal. The trees, although only 4 years old, are now over 12 feet high. Estimated amount, Rs. 480; expenditure, Rs. 382.

258. Kurrachee Collectorate Canals Division.—The Sonmeani regulator Utilizing surplus water of all along to the last mile; its bed, however, requires to be deepened to the proper level. Material for the commencement of the Nurwah tail regulator has been collected, but funds were not available for further work.

The Nurwah, although the work is unfinished, was very useful this year in passing off to the Indus a large portion of the Upper Sind floods. Estimated amount, Rs. 73,002; total expenditure, Rs. 48,224.

259. A cut of 100 feet wide at bottom, and 2,480 feet long, was made in the bed of the Arul, below Sehwan, by manual labour. It acted beneficially by increasing the scour at the Arul outlet during the inundation, and in draining off the upper portion of the water of the Muncher lake more quickly. The dredge worked from June to September, and did good service, among other things removing the temporary bunds, put up on account of the work in the cut above mentioned. From the beginning of October the dredge could not work for a month and half, owing to the increased depth of water in the Arul produced by the Seer floods. It worked, however, from November till March, when it had to be laid up for extensive repairs, and during this time it was employed on deepening the Arul bed below the Municipal gardens. Estimated amount, Rs. 56,606; total expenditure, Rs. 7,339.

260. This work on the feeder to the Great Gungrah (the lower portion of the Pinyari) is for the purpose of controlling the supply in floods or heavy rain. The work consists of adding horizontal wales and vertical baulks or "needles" to the bridge by which the Sujawal and Bhadipur road comes, and has been completed this year. Estimated amount, Rs. 3,012; total expenditure, Rs. 2,953.

261. The planting of 9 topes of trees on canals was sanctioned, with a view to shelter travellers, and increase revenue; ground has been taken up and fenced, and the plantation commenced; unfortunately 3 gardens or topes were flooded, owing to breaches in canals or embankments; but 800 trees have been planted, and are getting on well. Blackwood trees, which will prove valuable hereafter, have been put in the hedges. The floods, and consequent dismissal of establishment, caused the saving on the allotment for the year. Estimated amount, Rs. 10,620; total expenditure, Rs. 996.

IV.—COMMUNICATIONS.

I.—ROADS.

262. **Kanara.**—This road, from Haliyál to Lingunmut, is about 4 miles in length. It has been embanked, and the surface consolidated as a moorum road. Estimate, Rs. 27,830; expenditure, Rs. 19,877.

Road from Haliyál to Yellápur.
(Forest Funds).

263. The last portion of the road from Haliyál to Yellápur, a length of about 6 miles, has been improved, and the work completed at a cost of Rs. 7,048.

264. The road from Agsur to the foot of the Waddi Ghát is a bullock-track, 9½ miles in length. The line has been defined by proper side channels, and its surface has been made. It is 16 feet in width. Estimate, Rs. 4,074; expenditure, Rs. 1,973.

Road from Agsur to foot of
Waddi Ghát. (Local Funds).

265. **Dharwar.**—Improvements to the road from Haliyál to Hubli have been commenced. Estimate, Rs. 4,750; expenditure, Rs. 1,390.

Road from Hubli to Haliyál.
(Local Funds).

266. This is the old Madras road, which, before the days of railways, formed the chief line of communication between Poona and Mysore. There is still a considerable traffic along it, and the metalling, in progress, will be an improvement. The metalling was started as a famine relief work, but was not much resorted to during the official year. The pressure, as anticipated, came afterwards. Estimate, Rs. 6,42,783; expenditure, Rs. 1,11,557.

267. The road from Gadag to Hesrur is the only portion of the main road from the port of Karwar to the railway at Bellary, which remained unfinished. The portion between Gadag and Dambal, 12 miles, was moorumed, drained, but unbridged; but from Dambal to Hesrur, 16 miles, it was not made at all. This portion was taken up as a relief work, and the whole of the embankments from Dambal to Hesrur have been finished, and the collection of moorum, with which the surface will be coated to a depth of 1 foot, is in progress. Estimate, Rs. 1,81,156; expenditure, Rs. 40,535.

268. A new road, 46 miles long, between Hubli and Konnur, on the line to Kaládgi, has been embanked for nearly the whole length, and moorum and sand collected. Estimate, Rs. 1,50,000; expenditure, Rs. 1,37,283.

Road from Hubli to Kaládgi.
(Famine Relief).

Bellary and Karwar road from
Hubli to the Kanara Frontier.
(Famine Relief).

269. The portion of this road from Sangtikopp to Hubli is being metalled. The work has been undertaken for relief purposes. Estimate, Rs. 86,000; expenditure, Rs. 32,266.

Road from Nawalgund to Anni-
geri. (Famine Relief).

270. The earthworks of the road from Nawalgund to Annigeri are completed, and portions of the road surface have been moorummed. Estimate, Rs. 26,702; expenditure, Rs. 6,452.

Road from Pála to Bádámi.
(Local Funds).

271. Metal has been collected for the improvement of the road from Pála to Bádámi, near Belwátti. Estimate, Rs. 3,957; expenditure, Rs. 3,844.

Road from Nagsamudra to Kat-
machgi. (Famine Relief).

272. Moorum has been collected, and spread to a depth of 6 inches over the surface of the road from Nagsamudra to Katmachgi. Estimate, Rs. 8,692; expenditure, Rs. 6,293.

273. Gutters have been
Road from Gadag to Málkund.
(Famine Relief).

excavated on the sides of the road between Gadag and Málkund, and the material so obtained has been used to raise the road surface. Moorum has been collected. Estimate, Rs. 6,795; expenditure, Rs. 5,450.

Road from Sawanur to Banká-
pur. (Local Funds).

274. A quantity of moorum has been collected for the road from Sawanur to Bankápur, and is now being spread. Estimate, Rs. 5,237; expenditure, Rs. 2,487.

Road from the Sawanur Boun-
dary to Karajgi. (Local Funds).

275. The road from Sawanur to Karajgi was embanked during the year. Estimate, Rs. 7,515; expenditure, Rs. 3,906.

276. The road from Samasgi to Háwanur has been embanked from Háveri towards Sangur for a length of 7 miles, and from A'lur towards Sangur for a length of 2 miles. Estimate, Rs. 16,040; expenditure, Rs. 4,668.

Road from Samasgi to Háwanur.
(Famine Relief).

277. The road from Guttal to Ránibennur has been defined by the excavation of side and catch-water drains, and moorum has been collected. Estimate, Rs. 6,244; expenditure, Rs. 2,994.
Road from Guttal to Ránibennur. (Famine Relief).

278. The earthworks on the road from Rattihalli to Barragubbi, $2\frac{1}{2}$ miles long, have been completed, and the collection of moorum is in progress. Estimate, Rs. 3,779; expenditure, Rs. 1,938.
Road from Rattihalli to Barragubbi. (Famine Relief).

279. The masonry drains on the road from Shiggaon to Sawanur have been under construction. Estimate, Rs. 21,894; expenditure, Rs. 18,700.
Road from Shiggaon to Sawanur. (Local Funds).

280. This road, from Ron to Nawalgund, is 26 miles long. The embankments have been carried on during the year, and will be finished by June 1877. Estimate, Rs. 98,140; expenditure, Rs. 33,422.
Road from Ron to Nawalgund. (Famine Relief).

281. Moorum has been collected and stacked for about 3 miles of the road, from Kalkeri to the Virapur Pass (on the Másur and Mundargi line), and the road has been cleared up to nearly its whole length. Estimate, Rs. 2,827; expenditure, Rs. 2,591.
Road from Kalkeri to the Virapur Pass. (Famine Relief).

282. Moorum has been spread over 3 miles of this road at a cost of Rs. 4,773.
Road from Mundargi to Hamgi, *viâ* Karálhalli. (Famine Relief).

283. **Belgaum.**—The work of metalling this road in the Belgaum Collectorate, which has been in progress for some years, has been carried on as a relief work. Estimate, Rs. 3,98,611; expenditure, Rs. 57,346.
Madras Mail Road. (Famine Relief).

284. Moorum, sand, and earth, have been collected and stacked for the improvement of the road from Belgaum to Linganmutt. Estimate, Rs. 84,000; expenditure, Rs. 1,736.
Road from Belgaum to Linganmutt. (Famine Relief).

285. The improvement of the road from Belgaum towards Kaládgi has been undertaken as a relief work. The diversion at the Kardigudi Ghát is nearly completed. Expenditure, Rs. 33,357.
Road from Belgaum to Panchgaum towards Kaládgi. (Famine Relief).

286. Double gutters have been excavated for the road from Bailhongal to Saundatti, and the road surface formed by the spreading and consolidating of moorum; 12 drains have been completed. Estimate, Rs. 16,317; expenditure, Rs. 14,401.
Road from Bailhongal to Saundatti. (Local Funds).

287. A road from Bailhongal to Kittur has been improved at a cost of Rs. 11,562.
Road from Bailhongal to Kittur. (Local Funds).

288. The improvements to a portion of the road from Gotur to Tásgaon have been nearly completed. Estimate, Rs. 11,788; expenditure, Rs. 10,224.
Road from Gotur to Tásgaon. (Famine Relief).

289. The improvement of the road from Murgundi to Telsung is in progress. Estimate, Rs. 28,776; expenditure, Rs. 24,078.
Road from Murgundi to Telsung, *viâ* Athni. (Famine Relief).

290. The road from Soundalga to Boregaon has been improved at a cost of Rs. 5,253.
Road from Soundalga to Boregaon. (Local Funds).

291. The improvements to the road from Yergatti to Yádwád are approaching completion. Estimate, Rs. 17,974; expenditure, Rs. 15,502.
Road from Yergatti to Yádwád. (Famine Relief).

292. The improvements to the road from Khanapur to Mugutkhán Hubli are in progress. Estimate, Rs. 8,533; expenditure, Rs. 2,369.
Road from Khanapur to Mugutkhán Hubli. (Famine Relief).

293. The improvements to this line of road have been nearly completed. Estimate, Rs. 10,788; expenditure, Rs. 8,980.
Track line from Athni to Yebarhatti, *viâ* Dharur. (Famine Relief).

294. Improvements have been undertaken to the road from Yebarhatti to a junction with the Nagnur and Palbhavi road. Estimate, Rs. 18,010; expenditure, Rs. 1,3395.
Road from Yebarhatti, *viâ* Mugalkod, to meet the Nagnur and Palbhavi road. (Famine Relief).

Road from Yemkanmerdi to Duddi. (Famine Relief).

295. Moorum has been collected and stacked for the road from Yemkanmerdi to Duddi. Estimate, Rs. 6,825; expenditure, Rs. 8,678.

296. The work of collecting and stacking moorum in the Yemkanmerdi and Chikodi Road from Yemkanmerdi to Chikodi. (Famine Relief).

road has been in progress. Estimate, Rs. 34,125; expenditure, Rs. 8,020.

Road from Arbhavi to Nargund.

297. Moorum has been collected for the improvement of the Arbhavi and Nargund road. Estimate, Rs. 72,345; expenditure, Rs. 48,304.

298. The work of collecting and stacking moorum for the improvement of the road from Sankeshwar to Lokapur. (Famine Relief).

from Sankeshwar to Lokapur is in progress. Estimate, Rs. 79,170; expenditure, Rs. 22,147.

299. Moorum, sand, and earth, for the improvement of the Nipáni and Chikodi road, have been collected, and the work is in progress. Estimate, Rs. 8,190; expenditure, Rs. 488.

Road from Nipáni to Chikodi. (Famine Relief).

300. **Ratna'giri.**—The project comprised two schemes: one for completing, and the other for widening the road in the Chiplun Bazaar. The former is completed, and the latter half done. Estimate, Rs. 7,983; expenditure, Rs. 4,780.

Road from Chowki to the Nerur Ferry. (Famine Relief).

301. This road, about 7½ miles long and 15 feet wide, runs partly over hill-side; nearly completed. Estimate, Rs. 10,833; expenditure, Rs. 10,234.

Road from Khed to Poládpur.

302. The road from Khed to Poládpur has been improved at a cost of Rs. 29,317.

303. This road, from Dápoli to Pálgarh, is 15 feet wide, and runs partly over hill-side. A portion from Dápoli to Karjani was executed by Civil Agency. The remaining portion, about 6 miles in length up to Pálgarh, has been constructed by this Department. Amount of estimate (original) Rs. 4,597; expenditure, Rs. 4,623.

Road from Dápoli to Pálgarh. (Famine Relief).

Road from Khed to Pálgarh. (Local Funds).

304. The construction of a cart-road from Khed to Pálgarh has been nearly completed. Estimate, Rs. 13,194; expenditure, Rs. 12,614.

Road from Poládpur to Umbershet. (Famine Relief).

305. Work has been commenced on the road from Poládpur to Umbershet. Estimate, Rs. 24,893; expenditure, Rs. 533.

Road from Chiplun to Gohagarh. (Famine Relief).

306. The construction of this road also has been commenced. Estimate, Rs. 41,310; expenditure, Rs. 21.

307. **Kala'dgi.**—Improvements are being made to the road from Sholápur to Hubli, on the section from the River Bhima at Dhulkhed to the River Malprabha at Govindkop, 108 miles. Nearly two-thirds of the estimated quantity of the work of collecting and stacking moorum, and filling in embankment has been completed. Estimate, Rs. 3,00,050; expenditure, Rs. 1,61,794.

Road from Sholápur to Hubli. (Famine Relief).

308. The road extends from Dhulkhed to Guduk, 103 miles. Nearly one-third the estimated quantity of the work of collecting and stacking moorum has been completed. Estimate, Rs. 3,00,323; expenditure, Rs. 55,020.

Road from Sholápur to Bellary. (Famine Relief).

309. The road from Indi to Horti forms a junction of 15 miles in length, between the two main roads from Sholápur to Hubli and Sholápur to Bellary. Moorum has been collected to improve the surface of the road. Estimate, Rs. 32,055; expenditure, Rs. 13,816.

Road from Indi to Horti. (Famine Relief).

Road from Bijápur to Hippargi. (Famine Relief).

310. A portion of the road from Bijápur to Hippargi, within the limits of Bijápur, 2½ miles in length, has been moorummed at a cost of Rs. 3,465.

311. The road from Bágalkot to Hungund is 30 miles in length, and forms a junction between the main roads from Sholápur to Hubli and Sholápur to Bellary. The outlay has been chiefly in the collecting of moorum. Estimate, Rs. 89,436; expenditure, Rs. 19,952.

Road from Bágalkot to Hungund. (Famine Relief).

- 312. Kolha'pur.**—The work on this road has consisted in bringing the surface into shape with moorum. Estimate, Rs. 1,44,534; expenditure, Rs. 17,760.
Poona and Harihar Road.
- 313.** A road from the Camp at Kolhápur to join the Miraj Road has been constructed at a cost of Rs. 2,869.
Road from near Camp to join Miraj Road. (State Funds).
- 314.** The survey of the Amba Ghát has been in progress during the season. The Ghát road will be about 7 miles in length. Expenditure on the survey in the year, Rs. 144.
Amba Ghát.
- 315.** The construction of this road has been in progress. Estimate, Rs. 1,10,449; expenditure, Rs. 49,890.
4th Section of Kolhápur and Amba Ghát. (State Funds).
- 316.** A road from Inchalkaranji to the Panchganga River has been constructed at a cost of Rs. 8,355.
Road from Inchalkaranji to Panchganga River. (State Funds).
- 317.** The drainage of the Inchalkaranji and Atigiri road has been completed at a cost of Rs. 1,752.
Road from Inchalkaranji to Atigiri. (State Funds).
- 318.** The work of spreading a coat of moorum on the road from Shiroti to Atigiri has been in progress. Estimate, Rs. 5,700; expenditure, Rs. 3,373.
Road from Shiroti to Atigiri. (State Funds).
- 319.** The formation of this road has been in progress. Estimate, Rs. 5,000; expenditure, Rs. 1,113.
3rd Section of Kolhápur and Bhudergarh Road. (State Funds).
- 320.** The road from A'jra to Ghár-Hingluz has been completed. Cost, Rs. 59,095.
Road from A'jra to Ghár-Hingluz. (State Funds).
- 321.** The portion of the Nipáni and Kurundwád road, which lies in the Kolhápur territory, has been constructed at a cost of Rs. 20,454.
Road from Nipáni to Kurundwád. (State Funds).
- 322.** A sum of Rs. 19,500 has been expended in the year in planting trees along several roads in the Kolhápur State.
Planting trees. (State Funds).
- 323. Krishna Bridge Division.**—In progress. A road from Sàngli, as an approach to the new bridge at Udgaon, has been commenced. Estimate, Rs. 4,181; expenditure, Rs. 493.
British portion of Sàngli and Udgaon Road.
- 324. Satara.**—But little work remained to be done on this Ghát, and the entire work was finished in the year. Total expenditure, Rs. 4,43,462.
FitzGerald Ghát Road.
- 325.** Five miles of this road, viz., from Peit to Kameri, have been metalled with a 6-inch coat. Metal has been prepared partly for another 3 miles, leaving 3 miles for which metal is required. Estimate, Rs. 4,87,490; total expenditure, Rs. 2,24,643.
Metalling the Mail Road (4 sections of the Shirwal and Warna Road.) (Famine Relief).
- 326.** These are small Gháts, crossing spurs of the main range between Waae and Phul-tou. The Adurkey Ghát has been completed, and the Shirgaon Khind opened out to an average width of 14 feet, sufficiently to admit of traffic. Estimate, Rs. 15,363; expenditure, Rs. 11,223.
Improving Shirgaon Khind and Adurkey Ghát. (Famine Relief).
- 327.** The work on the road from Satara to Pátan consisted of opening out a bullock path, with a ruling gradient of 1 in 10, down the northern slope of the spur dividing the Quoina and Tárli River Valleys; the line has been continued to the village of Tárli, where it ends. Completed at a cost of Rs. 4,285.
Road from Satara to Pátan. (Local Funds).
- 328.** The improvement of the road from Karád to Naguz has been undertaken as famine work. The line has been improved in places by cutting down steep slopes, building road dams, and moorumming the surface where the sub-soil is black earth. Estimate, Rs. 51,693; expenditure, Rs. 14,730.
Road from Karád to Naguz. (Famine Relief).
- 329.** The road from Karád to Tásgaon has been improved for a length of 6 miles between the Krishna and the Much, under Ghar hill, two miles beyond the village of Shenowli, the surface has been moorummed, several small cross drains have been built, and the side drainage attended to. Estimate, Rs. 12,612; expenditure, Rs. 7,256.
Road from Karád to Tásgaon. (Famine Relief).
- 330. Shola'pur.**—The road from Sholápur to Tákli forms the first section of the road from Sholápur to Hubli, viz. Bijápur and Kaládgi. Tákli is on the Bhima River, the boundary of the Sholápur Collectorate, at

19 miles distance from Sholapur Railway Station. The road runs mostly over black soil. That portion of it which lies between the Sina and the Bhima Rivers, becomes extremely difficult at times during the monsoon season, and some of the softer-bottomed nullas are impassable for days. The present project provides for completely embanking and cross-draining the first section, and comprises 8 culverts, 8 feet and 10 feet in span, of from 1 to 8 arches, 32 slab-drains of from 1 to 5 vents, and 52 barrel-drains of 3 feet to 5 feet in diameter. The work done in the year consisted in widening the road from 22 feet to 25 feet, in altering the guttering, in spreading moorum on its surface, in completing the embanking, and moorumming, and in constructing 1 culvert, 5 slab-drains, and 8 barrel-drains, for a length of 4 miles; also in partly embanking and moorumming 6 other miles, and in providing material for further work. The whole length between the Sina and Bhima Rivers has now been constructed and drained throughout, with the exception of one bridge. A new piece of road to the Sholapur City and Railway Station has been commenced. Estimate, Rs. 1,24,452; expenditure, Rs. 62,861.

331. A sum of Rs. 1,984 was expended in constructing two culverts and four slab-drains, with approaches to them, on the road from the Bársi Road Station to Pandharpur. (Local Funds). Road from Bársi Road Station to Pandharpur. (Local Funds).

332. The metalling and improving the road from Bársi to Yedsi has been undertaken as a relief work. The road, which is 20 miles in length, is to be brought into the condition of an undrained metalled road. Its surface is being widened from 20 feet to 24 feet, and improved by embanking, excavating, and enlarging gutters, and easing gradients. Moorum and metal are being collected. The Ghát portion is being widened by cutting to 26 feet. Estimate, Rs. 1,23,908; expenditure, Rs. 69,436.

333. The cleared track, 41 miles in length, from Pandharpur to the boundary of the Sholapur Collectorate at Janoni, is being converted into a first-class moorummed, undrained road, 22 feet wide, by embanking and cutting, opening side and catch-water gutters, easing dips and ridges, and by collecting and spreading moorum. Estimate, Rs. 62,856; expenditure, Rs. 39,315.

334. The road from Jehur Station to Pandharpur is 43 miles long and 20 feet wide. The work in progress consists in forming a 1st-class moorummed, undrained road by embanking with earth and moorum, cutting ridges in hard moorum and earth, opening side gutters; easing approaches to, and clearing beds of, nalas. Moorum is being collected and spread. Estimate, Rs. 65,864; expenditure, Rs. 39,404.

335. The cleared track, 42 miles in length and 25 feet wide, between Sholapur and Bársi is being improved and converted into a 1st-class moorummed, undrained road, by embanking, opening side and catch-water gutters, easing dips and ridges, and by collecting and spreading moorum. Two deviations from the existing line are being constructed, one near Nanaz, from the 10th mile-stone to the 13th, in order to obtain a line straighter and more free from deep dips, and the other round Kolgaum, rendered necessary by the construction of the Pangaum Tank. Estimate, Rs. 65,372; expenditure, Rs. 33,699.

336. A new road, 20 miles in length, is being constructed from Akhuj, in the Málsiras Taluka, to the southern frontier of the Taluka at Kolgaum, to meet the road constructed from the latter place to Sangola. The work done consists in embanking with, and cutting in, earth and moorum; opening side and catch-water gutters, clearing nala dips, easing gradients, and by collecting and spreading moorum. Estimate, Rs. 14,185, expenditure, Rs. 7,278.

337. These branch roads from Kussalumb, on the Bársi-Yedsi road, and from Yedsi to the British Frontier, near Yermalla and Tadwalla, respectively, run over the existing cart-tracks, and are being brought into the condition of 1st-class moorummed, undrained roads, by embanking and cutting, opening side and catch-water gutters, easing gradients, and by collecting and spreading moorum. Estimate, Rs. 28,321; expenditure, Rs. 9,435.

338. Poona Districts.—The road from Khed to Pábal has been carried out partly by Civil and partly by Public Works Agency. It consists in making a cleared track moorummed throughout, but without bridges and drains, between the village of Khed, on the Poona and Násik road, and Pábal, a large and important village in the Sirur Taluka. The length of the road is about 12½ miles. Cost, Rs. 10,198.

Road from Indápur to the Nira River. (Famine Relief).

339. The road from Indápur, through Bowreh, to the Nira River is about $14\frac{1}{2}$ miles, and it has been cleared at an expenditure of Rs. 500 per mile. Cost, Rs. 6,939.

340. A cleared track between Baramati, a large and important town, in the Bhimthari Taluka, and Moregaon, on the Sirur and Nira bridge road; was carried out as a famine relief work, at an average cost of Rs. 503 per mile. Its total length is 19 miles and 330 yards. Cost, Rs. 9,610.

Improving the existing track from Moregaon to Jejuri. (Famine Relief.)

341. This work is a continuation of the one from Baramati to Moregaon, and was carried out at a cost of Rs. 5,682.

342. The improvements to the road from Poona, *via* Pour, to the Pimpri Ghát consisted in the preparation of a quantity of metal and moorum for use in the ordinary repairs of the road. Estimate, Rs. 49,000; expenditure, Rs. 17,934.

Road from Poona to the Pimpri Ghát. (Famine Relief).

343. The work on the road from Khed to Bhimashankar was commenced as a famine relief work; but it was shortly afterwards suspended as not necessary. Expenditure, Rs. 838.

Road from Khed to Bhimashankar. (Famine Relief).

344. The improvements to the road from the Anna Ghát to the Málsej Ghát consisted in clearing and improving an existing track, at an average cost of Rs. 500 per mile. Estimate, Rs. 2,002; expenditure, Rs. 2,471.

Road from the Anna to the Málsej Ghát. (Famine Relief).

345. The length of the road from Sáswad to Párgaon is 6 miles. The improvements to it are being carried out at an average cost of Rs. 500 per mile. Expenditure, Rs. 1,180.

346. **Ahmednagar.**—The road commences at Káshti, in the 41st mile of the Dhond and Nagar Road, passes through the Talukas of Shrigonda, Karjat, and Jamked, and including a break of $1\frac{1}{2}$ miles through the Nizam's dominions, is 65 miles in total length. The width of the road is 18 feet. A layer of moorum, varying from 2 inches to 6 inches in depth, has been spread throughout the entire length, except for a short distance, where moorum was not procurable at a reasonable distance. Nala and river banks have been sloped. Estimate, Rs. 29,859; expenditure, Rs. 29,454.

Road from Káshti to Kharda. (Famine Relief).

347. The Ghát road from Bari to Washeli is 3 miles in length, and connects the Akola Taluka in the Ahmednagar Zilla, with the Egatpuri Taluka in the Násik Zilla. The general features of the project were described in the last annual report, and the work has since been completed at a cost of Rs. 8,034.

Road from Bari to near Washeli.

348. This work was commenced in October last, with a view to provide work for the famine-stricken of the district. The road is $46\frac{1}{2}$ miles in length, and it is proposed to break sufficient metal to provide a coating, 18 feet by 4 inches thick, for the whole distance. Up to the close of the official year an aggregate of 802,100 cubic feet was broken, a quantity corresponding to a length of 25 miles. Moorum for blindage has also been excavated, and stacked to the extent of 405,000 cubic feet. The work has since been closed, and the people transferred to the Dhond and Manmad Railway. Expended Rs. 47,773.

Metalling Dhond Road. (Famine Relief).

349. The length of the road is 29 miles; a large quantity of moorum has been excavated and stacked. Completed for Rs. 9,000.

Collecting moorum on the Násik and Poona Road. (Famine Relief).

350. The length of the road is 66 miles, and about $1\frac{1}{2}$ millions cubic feet of moorum have been excavated and stacked. Expended Rs. 20,000.

Collecting moorum on the Málsa Road. (Famine Relief).

351. This work was opened as a famine relief work; a large quantity of metal and moorum has been excavated and stacked. Expended Rs. 14,601.

Collecting Road material on the Ahmednagar and Sirur Road. (Famine Relief).

352. The road, which is $25\frac{1}{2}$ miles in length, branches off from the Káshti and Karda Road, near the village of Chincholi, in the Karjat Taluka, and after passing through Karjat and Rásin, terminates at the north Dicksal Railway feeder.

353. The road, which is $25\frac{1}{2}$ miles in length, branches off from the Káshti and Karda Road, near the village of Chincholi, in the Karjat Taluka, and after passing through Karjat and Rásin, terminates at the north Dicksal Railway feeder.

354. The road, which is $25\frac{1}{2}$ miles in length, branches off from the Káshti and Karda Road, near the village of Chincholi, in the Karjat Taluka, and after passing through Karjat and Rásin, terminates at the north Dicksal Railway feeder.

355. The road, which is $25\frac{1}{2}$ miles in length, branches off from the Káshti and Karda Road, near the village of Chincholi, in the Karjat Taluka, and after passing through Karjat and Rásin, terminates at the north Dicksal Railway feeder.

356. The road, which is $25\frac{1}{2}$ miles in length, branches off from the Káshti and Karda Road, near the village of Chincholi, in the Karjat Taluka, and after passing through Karjat and Rásin, terminates at the north Dicksal Railway feeder.

357. The road, which is $25\frac{1}{2}$ miles in length, branches off from the Káshti and Karda Road, near the village of Chincholi, in the Karjat Taluka, and after passing through Karjat and Rásin, terminates at the north Dicksal Railway feeder.

358. The road, which is $25\frac{1}{2}$ miles in length, branches off from the Káshti and Karda Road, near the village of Chincholi, in the Karjat Taluka, and after passing through Karjat and Rásin, terminates at the north Dicksal Railway feeder.

bank of the Bhima River, the boundary of the Collectorate. The width of the road is 18 feet, and excepting for a short space, where moorum was not procurable at a reasonable distance, a layer of moorum, varying in depth from 3 inches to 6 inches, has been spread throughout the entire length of the road. Completed at a cost of Rs. 13,184.

353. The distance between Ráhuri and Belápur is about 12 miles. The work was commenced under Civil Agency, and an expenditure of Rs. 1,987 had been incurred when it was transferred to this Department. Road from Ráhuri to Belápur. The work was closed on the 5th April, with the approval of the Collector, and the people were transferred to the Railway. Total expenditure, Rs. 3,269.

354. The Loni-Bari road is about 54 miles. It commences at a point on the Násik Road, near the village of Loni, and passing through the villages of Nimbgoan, Jali, Kokangoan, Wadgoan, and Samnapur, enters the town of Sangamner. From Sangamner the road passes through Chikhli and Kalas, and on to the town of Akola. From Akola the line is carried to the foot of the Vitteh Ghát, which latter is partly made, and recommencing near the village of Jamgoan, is continued to the town of Rájur. From Rájur to Bari, a distance of 17 miles, cart traffic has hitherto been impracticable. The road will pass near the villages of Málegoan, Runde, Wanki, and Waranguly, and, when finished, will open up communication with the Bari Ghát, lately completed, and from the foot of which it is but a few miles to the G. I. P. Railway. The road is to be 20 feet wide, and provided with a layer of moorum, 18 feet wide by 3 inches in thickness. Work is in progress on the section between the Vitteh Ghát and Loni. Estimate, Rs. 78,654; expenditure, Rs. 28,869.

355. Northern Konkan.—The new road from Gagoda Khind to Campuli has been thrown open to the public. This work is finished, with the exception of some trifling expenditure on trees, metal, pointing, &c. Estimate, Rs. 1,59,986; expenditure, Rs. 1,58,096.

356. The road from Kolimb to Murbád is the 2nd section of the road from Kalyán to the Malsej Ghát. The earthwork, and nearly all the drains, have been completed, and moorum has been collected. This portion, which is 8 miles in length, will be open to traffic by October 1877. Estimate, Rs. 47,587; expenditure, Rs. 19,379.

357. A road from Wewjee towards Umbargam has been constructed for Rs. 4,895.

358. Na'sik.—The work on the 2nd section of the Násik, Dindori, and Kulwan road consisted in making a suitable road, with masonry drainage work. Approaches have also been constructed to the river at Kadwa, with causeways on the latter, and at the Dindori rivers. Estimate, Rs. 82,569; expenditure, Rs. 9,089.

359. Two small bridges on the road from Lasalgaon to Vinchur were constructed in the year, one of 3 spans each of 10 feet, and the other of 1 span of 10 feet. The road has been completed at a cost of Rs. 7,819.

360. The road from Lasalgaon to the Station is 5,695 feet long. One culvert of 2 spans of 5 feet each, and 1 slab drain of 2 vents, each 2 feet, have been constructed. Also a portion of the roadway, 1,700 feet in length, and 12 feet in width. Estimate, Rs. 4,622; expenditure, Rs. 1,985.

361. The metalling of the first 4 miles of the road from Násik to Trimbak has been completed at a cost of Rs. 4,427. The metal was laid 12 feet wide and 5 inches thick in the centre, and 3 inches at the sides. A coat of sand was added, and the whole rolled into a hard surface.

362. This line of road is 30 miles and 5,200 feet in length, and runs for the most part through hilly country. Its improvement has been undertaken with the view of opening up communication at a time of scarcity of rain, and to meet local requirements. Ghoti is a considerable grain-market, and also a railway station on the G. I. P. Railway line. About 6 miles west of Sinnar the road is carried across the Kapralla Ghát in a line, 1 mile 4,940 feet in length, at a maximum gradient of 1 in 20. All nalas and rivers throughout the line, where the soil is firm, are crossed on their own beds, the approaches being merely sloped to an easy gradient, except on the Kapralla Ghát, where the

two principal nalas have been crossed by 3 slab drains (each of 2 vents), the others being filled in with boulders bound by rough dry stone rubble walls, and brought by a layer of moorum almost flush with formation level. A branch road from Pandurli to Camp Deolali has also been constructed, the total length of which is 5 miles and 1,918 feet. Estimate, Rs. 98,901; expenditure, Rs. 75,528.

363. The road from Yeola to Niphád, which was progressing as an ordinary Local Funds work, was subsequently made use of as a famine relief work. Four miles of earth-cutting and banking have been carried out, and moorum has been spread on the surface. The road has been constructed from Yeola to Deshmani, where it is abandoned, as the line is now to be taken, *via* Vinchur and Nytal, to Niphád. The consolidation of the moorum will be carried out during the monsoon of 1877. Estimate, Rs. 72,440; expenditure, Rs. 21,817.

364. The road from Deshmani to Vinchur is 5 miles and 3,980 feet in length, and 18 feet wide, and connects the preceding road with Vinchur, whence the traffic is enabled to proceed by roads previously constructed to the Lasalgaon Railway Station. It was undertaken as a relief work, and is unbridged, the approaches to nalas are sloped down to easy gradients, and the nalas are crossed, some on their natural beds, others by means of road dams. The road surface consists of a 9-inch layer of moorum. The work is completed, with the exception of consolidation, which will be undertaken during next monsoon. Estimate, Rs. 13,276; expenditure, Rs. 11,921.

365. This road was undertaken as a relief work, and is 9 miles and 2,656 feet in length. It is moorumed, but not bridged. Its construction is similar to the road preceding (Road from Deshmani to Vinchur), of which it may be said to be a continuation, and the two together obviate the necessity of completing that portion of the Yeola and Niphád road that lies between Deshmani and Niphád. The work is very nearly completed, with the exception of consolidating, which will be carried out in the monsoon of 1877. Estimate, Rs. 22,908; expenditure, Rs. 20,832.

366. The road from Niphád to Deopur is 25 miles 3,880 feet in length. The embanking, cutting, and a considerable portion of the moorum-ming is completed; the construction of the road dams is in progress. The consolidation of the road surface will be undertaken during the monsoon. Estimate, Rs. 85,518; expenditure, Rs. 48,600.

367. The road from the Bhowarbari to Vinchur was taken in hand in October 1876 as a relief measure. It connects the Bhowarbari with the Chandor and Lasalgaon road, and, with the exception of consolidation, the work on it has been completed. The branch from Bhowarbari to Tangdi, a distance of 1 mile and 4,900 feet, is intended to assist the fair-weather direct traffic to Lasalgaon, thus avoiding the detour, *via* Mungrul and Nimbgaoon. Estimate, Rs. 27,582; expenditure, Rs. 14,071.

368. The total distance of the road from Bhowarbari to Satána is 15 miles 3,162 feet, of which about 10 miles have been partially completed from Local Funds; work on this road was undertaken as a measure of relief, to provide employment on the completion of the Bhowarbari and Vinchur road, 3rd section, and is in progress. Expenditure in the year, Rs. 64.

369. The road from Yeola to the Frontier of H. H. the Nizam's territory was undertaken as a relief measure, and its construction is similar to those already described. It is 13½ miles in length, and is about half completed. When finished, the line will prove of great assistance to the grain traffic to Lasalgaon. Expenditure, Rs. 7,790.

370. The road from the Kherwadi Railway Station to Sinnar, *via* the Naigaon Ghát, is 18 miles 400 feet in length, and has been undertaken as a relief work, to meet the wants of the large body of labourers, when they could no longer be accommodated on the Niphád and Deopur road. Estimate, Rs. 58,740; expenditure, Rs. 6,182.

371. **Khandesh.**—Work on the road from Dhulia to Pimpalner was commenced earlier than usual, as employment was required in the neighbourhood as a measure of relief. As all the earthwork of this road had been thrown up in the famine year 1872; only the masonry work was left. Eleven drains have been constructed, and 1 bridge and 23 drains are in progress.

In order to employ as much unskilled labour as possible, concrete has been substituted for rubble stone and lime, wherever practicable. Estimate, Rs. 3,20,898 ; expenditure, Rs. 1,71,644.

372. The road from Songir to Nundurbar up to Chintana, 11 miles in length, was commenced as a relief work, but as the bank of the first section, *via*, from Songir to Chintana, had already been thrown up, it was found necessary to commence the 2nd section from Chintana to Dhondaicha. Thirty-one drains have been constructed on the section from Songir to Chintana, and 14 drains are in progress. A quantity of cutting, embanking, and laying of moorum has been carried out in the section to Dhondaicha. The expenditure on both the sections in the year have been Rs. 36,998.

373. The road from Sowda to the Gatta Railway Station was commenced in August 1876 as a famine relief work. The bank was thrown up, and then metal was broken for the road ; about 1,200 people were employed on this for several months, but not being used to the work of breaking metal, their work was not found very economical. This will be a very expensive road, as the leads from the quarries to the nearest part of the road is about 3 miles. The metal is being carted to the roadside, and 3 small drains required were commenced. Estimate, Rs. 30,066 ; expenditure, Rs. 13,655.

374. The road from Pachora to the Titur River was commenced as a relief work ; about 2 miles of bank have been thrown up, 50,212 cubic feet of moorum spread and five masonry culverts have been in hand. Estimate, Rs. 23,595 ; expenditure, Rs. 3,093.

375. This road is a small piece, about 1 mile in length, commencing from town of Wurrungaon, and passing over a very bad piece of black soil. The old track was almost impassable during the rains. The bank, about 197,100 cubic feet, was thrown up, and 65,288 cubic feet of moorum excavated at the quarries, and one slab drain of three openings has been completed ; an Irish bridge is in progress. Estimate, Rs. 3,976 ; expenditure in 1876-77, Rs. 2,251.

376. The road from the Tapi River to Yawal was commenced as soon as the heavy work on the Sowda road was finished. It was not successful as a relief work, for the people from the Sowda side would not come, and only the people in the immediate vicinity attended the work. Work was commenced at Anjala, and has been confined to the Anjala River crossing during the year. Most of the heavy cuttings and banks have been thrown up, and the dry stone retaining walls have been commenced. Foundations for a few bridges and drains were dug. Expenditure, Rs. 2,823.

377. A very small expenditure was incurred on this work. It would have been finished last year, but that, owing to the failure of the late rains (September and October), the metal could not have been properly consolidated ; rolling was carried out in the year, and the work completed for Rs. 2,555.

378. A sum of Rs. 1,653 was expended in the year on the road from Parola to Amalner, which was undertaken as a measure of relief. Estimate, Rs. 66,320.

379. **Surat and Broach.**—The road from Chickhli to Bilimera has been metalled, and the whole of the water-courses bridged and drained. Estimate, Rs. 59,781 ; expenditure, Rs. 54,655.

380. The road from Ankleswar to Hansot has been metalled, and metal, or gravel, has been collected. With the exception of the Amla Khari, all the water-courses have been bridged and drained. Estimate, Rs. 2,13,826 ; expenditure, Rs. 1,98,581.

381. The earthwork of the road from Broach to A'mod, which was washed away during the monsoon of 1876, has been re-made, and the cross drainage improved at several points. Estimate, Rs. 3,32,641 ; expenditure, Rs. 2,94,200.

382. A large quantity of gravel and metal has been carted on to the road from Broach to A'mod to various points along it, and the 2 first miles out of Broach have been completed. Estimate, Rs. 1,57,029 ; expenditure, Rs. 41,798.

383. Kaira.—Four-fifths of the quantity of stone metal required for the road from Godhra to Páli, have been carted to the roadside, and the balance will be ready shortly. The work of spreading has been postponed, awaiting the decision in regard to the railway extension to Godhra. If the extension is sanctioned, the Railway Company will take over the road, and the metal will be used as ballast, instead of being spread on the road surface. Estimate, Rs. 79,464; expenditure, Rs. 55,098.

384. The Godhra and Dohad road is 48 miles in length, of which 28 are in British, and 20 within the limits of the Bára State. The road has been completed as an embanked and stone-metalled road, with bridges, culverts, and drains for the entire distance. The traffic is heavy, and is increasing, and the road has already helped to reduce the cost of transit between the railway and the remote portions of the Panch Máhals, and the neighbouring places. A toll has been established to cover the cost of maintenance of the road. Cost Rs. 4,76,810.

385. The road from Wásad to Borsad is an embanked, kunker-metalled road, 11 miles in length, with bridges, drains, &c. All the work has been completed, except the second layer of metal, which will be spread and consolidated in 1877-78. The road is now made use of by a considerable local traffic. Estimate, Rs. 41,325; expenditure, Rs. 37,287.

386. These three roads, in all about 16 miles in length, are intended to accommodate the traffic between Dholka and Kaira, with a branch to Náika, a town of local importance. The roads are to be embanked and kunker-metalled, with culverts, drains, &c. The earthwork has been completed, and the masonry works will be finished shortly. Total estimate of the three roads, Rs. 73,329; expenditure, Rs. 39,974.

Road from Dákor to Rukhiál.
(Local Funds).

387. The road from Dákor to Rukhiál is a stone-metalled road, under a mile in length. It has been finished and opened to traffic. Cost Rs. 43,063.

388. The road from Dákor to Kapadwanj is 20 miles in length, and is designed to connect Kapadwanj with the railway at Dákor. It is an embanked road with bridges, drains, &c. The earthwork has been completed, and the bridges and culverts are in progress, and will be finished shortly. There are 3 bridges, each of 3 spans of 20 feet. Estimate, Rs. 47,618; expenditure, Rs. 36,794.

389. This road is 18½ miles in length, and it is intended to accommodate the trade between Dholka and Nariád, while it will also be useful to Kaira, Mátar, and other places of local importance. It is to be embanked and kunker-metalled, with culverts and drains. The line has been cleared, and the earthwork completed. The masonry works have just been commenced. Estimate, Rs. 85,695; expenditure, Rs. 22,151.

390. These roads consist of a branch from the Godhra and Dohad road to Bára, the chief town in the Bára State. The length of the branch road is 8½ miles, and the line is to be stone-metalled, with bridges, weirs, culverts, &c. All the works have been completed, except spreading a portion of the metal, which will be completed in 1877-78. The road is now being greatly used. In addition, there are also several road clearances connecting some of the larger villages in the Bára State with the Godhra and Dohad road. These latter aggregate 12 miles, and the work on them is nearly completed, and they will be opened to traffic immediately. Estimate, Rs. 54,124; expenditure, Rs. 42,778.

391. Ahmedabad.—Two-thirds of the cost of the road from Sánand to the Railway Station is defrayed from Local Funds, and one-third from Provincial Funds. A description of this road was given in the last year's report. A curtain wall on the upstream side of Bridge No. 1, and other minor details, have been completed. Estimate, Rs. 22,391; expenditure, Rs. 21,787.

392. The old road outside the Delhi Gate fell with a steep gradient, and then again rose, and the line was unnecessarily devious; the road was, moreover, too narrow for the traffic which entered the Delhi Gate. The road has been improved by straightening, widening, and raising its surface, so as to give a sufficient width for the crowds who assemble on occasions of native festivals. A parapet wall, 27

feet in length, on the junction of the Dudhesur Road, has been built, and wing walls constructed. Kunker has been collected along the roadside, and partly spread. The work is nearly completed. Estimate Rs. 3,969; expenditure, Rs. 2,846.

993. The road from Ruhiāpuri Gate to the railway crossing is 3,175 feet in length, and with an average breadth of 22 feet. The road surface has been repaired, and then metalled with broken bricks, above which chipra (limestone) has been put, well watered, rolled, and consolidated. Cost Rs. 3,619.

394. The Kankeria Tank is much visited on holidays by the inhabitants of Ahmedabad. A road, 24 feet wide, has been made from the Astoria to the Raipur Gate, and thence to the tank. The entire length is 4,800 feet, and there are two culverts, and one barrel drain; the surface has been coated with broken bricks, above which kunker has been put, well rolled, and consolidated. Completed for Rs. 9,651.

395. On the south side of the Kankeria Tank are the remains of an old viaduct, which give access to an island in the centre of the tank. A road has been made from the end of the one described in the preceding paragraph, round to the south side of the tank. The width is 24 feet, and 2 inlets to the tank are crossed by culverts, which are in progress. Most of the earthwork has been completed, and broken bricks and kunker are being collected for the metalling. Estimate, Rs. 8,726; expenditure, Rs. 4,239.

396. **Kurrachee.**—The construction of the road from Joongshai to Tatta has been in progress. The sides of the road, which were worn down, have been restored, and the road surface has been brought to section, and some small masonry structures have been built on it. Estimate, Rs. 7,553; expenditure, Rs. 4,898.

Road for Ferry Ghāt at Rohri and Nara Bridge. (Local Funds).

397. **Begari Canal Division.**—This is a road, to avoid the circuit through the Town of Rohri, completed this year at a cost Rs. of 2,128.

II.—BRIDGES.

398. **Kanara.**—A masonry bridge of 3 arches, each 33½ feet in the clear, has been constructed on the Haliyāl and Lingammat road, at a cost of Rs. 16,129.

Alnawar Bridge.

399. The bridge is to cross a nala on the Yellāpur and Sirsi road. Its construction is to be of timber, with masonry piers, of 10 bays, each 35 feet. Materials have been collected. Estimate, Rs. 22,590; expenditure, Rs. 3,177.

Bedti Nala Bridge.

400. A timber bridge, supported on masonry piers, consisting of 3 spans, each 33 feet 4 inches, is under construction on the Dharwar and Coompta road. The foundations have been excavated, and partly filled in. Materials collected. Estimate, Rs. 32,000; expenditure, Rs. 10,043.

Anagundi Bridge.

401. An iron screw pile skew bridge of two spans, 25½ feet on the skew, has been completed on the Arbyle Ghāt road, about 7 miles from Karwar. Cost Rs. 13,529.

Chendia Bridge.

Dowghi Nala Bridge near Tattihal.

402. A masonry bridge of one arch, 40 feet in the clear, has been constructed across the Dowghi Nala, near Tattihal, at a cost of Rs. 8,923.

403. A wooden bridge, supported on masonry piers, is under construction over the Turguni Nala, on the Yellāpur and Sirsi road. The bridge consists of five spans, three of 30 feet each, and two of 33 feet. The foundations have been excavated, and the materials collected. Estimate, Rs. 12,041; expenditure, Rs. 2,835.

Turguni Nala Bridge. (Local Funds.)

404. **Dharwar.**—The Sirguppi bridge consists of four spans, each of 40 feet. The piers and abutments are of masonry, and the girders of teak-wood, trussed with wrought-iron rods. The roadway is of round teak-rafters, over which concrete has been laid. The nala is a dangerous one, abounding in quicksands, and the foundation had to be laid in cofferdams. Estimate, Rs. 45,976; expenditure, Rs. 40,753.

Sirguppi Bridge.

Arwatgi Bridge.

405. A bridge of one span, of 50 feet, on suspension girders, has been constructed across the Arwatgi Nala for Rs. 8,280.

406. The woodwork (muttee) of the bridge over the Lendi Nala, on the Karwar and Bellary road, has become decayed. It is to be renewed with teakwood, and the materials have been collected. Estimate, Rs. 9,598; expenditure, Rs. 3,955.
- Lendi Nala Bridge.
407. **Ratna'giri.**—Sixty dry-stone drains, of openings varying from 1½ feet to 3 feet, and eight culverts, of spans from 5 feet to 15 feet, have been constructed. The approaches to the culverts and drains have been raised, and those to the large rivers on the road improved. The portion of the road lying between Agwa and Kundmulla, about 4 miles in length, has been widened and otherwise improved. The work is nearly completed. Estimate, Rs. 1,01,085; expenditure, Rs. 89,604.
- Bridges and drains on the Ratnagiri and Chiplun road.
408. **Kolhapur.**—The foundations of the Panchganga bridge have been laid, and the superstructure up to the springing of the arches will be completed by the rains of 1877. Estimate, Rs. 1,84,374; expenditure, Rs. 68,671.
- Bridge over the Panchganga at Kolhapur. (State Funds).
409. A bridge over the Jiti Nala is under construction. Estimate, Rs. 38,116; expenditure, Rs. 10,152.
- Bridge over Jiti Nala. (State Funds).
410. The work of bridging the nalas on a section of the road from Kolhapur to Miraj is in progress. Estimate, Rs. 41,764; expenditure, Rs. 22,611.
- Bridging Nalas on 2nd section of Kolhapur and Miraj road. (State Funds).
411. Five nalas have been bridged on the road from Kolhapur to Miraj. Estimate, Rs. 42,708; expenditure, Rs. 39,815.
- Bridging Nalas on Kolhapur and Miraj road. (State Funds).
412. The Krishna bridge at Udgaon consists of 11 spans, of 70 feet, maximum height of piers 60 feet above bed, height of roadway above bed 81 feet, and, when completed, it will probably be the largest stone bridge in India. The south abutment and first eight piers have been completed up to springing level, and the foundations have been constructed of the remaining piers, Nos. 9 and 10, and of the north abutment, the centres of the first four arches have been hoisted and fixed in position, and the arching begun. The work is probably also singular in respect that the centres for supporting these large arches (owing to the great height of springing) cannot be supported by props from the ground, as is usual in ordinary bridges, but have to be made strong enough to span the whole interval between the piers, with only such support as is afforded by corbels from the sides of the piers. The total weight of arching is more than 500 tons. The actual weight bearing on the centre, is not less than 300 tons, and the weight of the timber, in each centre, for supporting the above, is 30 tons. When it is considered that the whole weight of an iron-girder bridge, with platform complete for the same span, would not be more than 30 tons, it will be understood how much more labour and difficulty are involved in the stone construction. If all goes well, four arches will be completed shortly, and the remaining seven may be turned, and the bridge finished by 1st August 1878. Estimate, Rs. 4,70,646; expenditure, Rs. 3,09,483.
- Krishna Bridge at Udgaon.
413. **Satara.**—The Tārli bridge consists of four 40-foot stone arches. The foundations of two piers have been laid, and their superstructure and that of one abutment brought up to springing level. The approaches have been two-thirds completed, the dry stone wing walls half done, and 2 arches, and a portion of a third, have been turned. Estimate, Rs. 1,24,967; expenditure, Rs. 1,06,273.
- Bridge over the Tārli, near Oomruj.
414. The bridge over the River Warna is of eight 60-foot arches. The north abutment has been founded, and the superstructure brought up to a height of 35 feet above foundation level. The foundation of a fifth pier has been laid, and the superstructure raised to a height of 15 feet. The superstructure of the 4 piers, built last year, has been raised to a height of 38 feet. A double cofferdam has been driven for a sixth pier. The foundations, for a 40-foot bridge across the Ghoukie Nala, on the south approach, have been filled, and the superstructure raised 4 feet. Nearly all the embanking has been completed. There has been sickness among the men at this work, and an outbreak of fever and of cholera greatly retarded the progress of the work. Estimate, Rs. 2,66,748; expenditure, Rs. 93,548.
- Warna Bridge, near Kunegaon.
415. The bridge over the River Wasna is of stone masonry of five spans, each of 40 feet. The piers and abutments have been raised to springing level, and the wing-walls to roadway level. The cutting and filling in the approaches have been completed, and a portion of the surface moorumed. Estimate, Rs. 42,724; expenditure, Rs. 25,586.
- Wasna Bridge on the Satara-Pundharpur Road. (Local Funds).

416. The Cherrigaon bridge is also of masonry, of three arches, each 30 feet. The superstructure has been completed up to springing level. Two arches and a portion of the third turned, and one centring struck. The embankment on the southern approach has also been nearly completed. Estimate, Rs. 21,325; expenditure, Rs. 15,902.

Bridge on the River Mand at Cherrigaon.

417. On the road from Satara to Tásgaon three bridges have been constructed, two of them of two 20-foot arches each, and one of two 25-foot arches. The work has been completed, with the exception of some filling in of the approaches of one of the bridges, and moorunning the surfaces of the approaches of the other two. Estimate, Rs. 13,278; expenditure, Rs. 12,199.

Masonry Bridges on the Satara-Tásgaon Road. (Local Funds).

Bridges and drains on the Karád-Tásgaon Road. (Local Funds).

418. Three slab drains of 2 openings, of 3 feet each, respectively, have been completed on the road from Karád to Tásgaon, at a cost of Rs. 2,504.

419. **Ahmednagar.**—A new single wooden ferry boat, 27 feet long, 7½ feet wide, and 2 feet 10 inches deep, has been provided at Kotul, at a cost of Rs. 819.

Ferry Boat at Kotul.

420. **Northern Konkan.**—The construction of the new bridge across the creek at Tanna has been carried on; all the columns, but two, have been finished, and all the girders, except three, have been fixed. There is some plant still due from England, and the early completion of the work is dependent upon its arrival. Estimate, Rs. 1,68,864; expenditure, Rs. 1,39,164.

Bridge over the Tanna Creek. (Local Funds).

421. **Surat and Broach.**—The bridge over the Udna Khári is a timber-topped, low-level bridge, of 13 spans, of 14 feet each, supported on piers of khairwood piles, each pier consisting of three piles. The roadway is 15 feet wide between the hurters, and is about 6½ feet high from the general level of the bed of the Khári. Completed, except the approaches. Estimate, Rs. 14,306; expenditure, Rs. 11,409.

Bridge over the Udna Khári. (State Work).

422. The bridge over the Wánki River is on the road from Balsár to Dharampor. It is a timber-topped bridge of eight spans, of 25 feet each, supported on masonry abutments and piers. All the seven piers have been brought up to string course; the east abutment has been raised 7 feet, and the west 8 feet in height. Most of the timber is ready on the spot. Estimate, Rs. 26,968; expenditure, Rs. 18,354.

Bridge over the Wánki River. (Local Funds).

423. This is a timber-topped bridge of three spans, of 25 feet each, having masonry abutments, wing walls and piers over the Wánkáner River, on the road from Bárdoli to Wánkáner. The superstructure of each span consists of five longitudinal girders, over which 3 inches planking is spiked, and over this is a layer of road metal. The roadway is 15 feet wide between the railings, which consist of standards, bottom, top, and middle rails of teak. The bridge is nearly completed; some metalling on the approaches remains to be done. Estimate, Rs. 9,522; expenditure, Rs. 8,618.

Bridge over the Wánkáner River. (Local Funds).

424. The additions consist of adding one span of 15 feet at one end of the existing bridge, and two spans, also of 15 feet each, at the other, to increase the waterway. It is a timber-topped bridge, supported on piers having three piles in each pier. Completed for Rs. 3,037.

Adding three spans to the existing wooden bridge over the Khari on the Kudrama Road. (Local Funds).

Drains and culvert on the road from Bárdoli to Karod. (Local Funds).

425. One culvert of 10 feet, and three barrel drains of 3 feet openings, have been constructed on the road from Bárdoli to Karod. The road surface has also been levelled. Cost Rs. 3,031.

426. In the report for 1875-76 mention was made of the character and commencement of this work, which was carried on to the close of the year, as far as the completion of 33 out of 36 columns forming the piers of the bridge. Between 1st April and 1st June 1876 the remaining three columns were sunk and built up, and the whole 36 columns braced with wrought-iron lattice bracing, and filled with lime concrete. At the same time three spans, viz., one on the Surat side and two on the Ránder side, were built and got into position. The works were closed from 15th June till 15th October for the monsoon. While the bridge was in the incomplete state above mentioned, viz., all the piers being brought up to full height, and only three spans of superstructure erected, the quality of the work was very strongly tested by a

Bridge over the Tapti River at Surat. (Contribution).

flood on the 5th, 6th, and 7th September 1876, which rose to within one foot of the highest flood ever known, when, although immense masses of brushwood were heaped up against some of the piers; notably against the 12th, counting from the Surat side, no vibration of the piers was observed, nor, after the subsidence of the flood, could any damage be detected. In December the iron-work of a complete span was lost by the sinking, in the Red Sea, of the S. S. *Zealot*; and great delay took place in procuring a duplicate of the lost span, which did not arrive in Bombay till the end of March 1877: had it not been for this accident, the bridge would have been opened to traffic sooner than the 1st of May 1877, the date on which it was formally declared opened. The total cost of this work is Rs. 7,29,121.

427. Ahmedabad.—The causeway, which was in progress last year, has been completed. After the monsoon of 1876 a very slight subsidence occurred, which was rectified by filling in boulders. Above this, smaller stones and spauls were carefully hand-packed, and 6 inches of concrete laid on and well rammed, so as to fill all interstices. Upon this paving was laid in mortar. During the fair season the paving has been covered with a layer of kunker, and the saltish soil of the creek, which binds well and makes a good roadway. Cost Rs. 10,678.

428. The materials of 15 spans of this bridge, which were found in the bed of the river at different places, and loose wood-work found at various villages, have been taken out from the river-bed, and the iron-work dismantled, and brought into store, at a cost of Rs. 5,505.

Canseway across the Khari on the Gogo Road.
Bridge over the Meetha Khalee Nala in the Daskrohi Taluka. (Local Funds).

429. This bridge of 20-feet span, which was in progress last year, has been completed at a cost of Rs. 2,819.

Bridge over the Nala near the village of Oosmanpur in the Daskrohi Taluka. (Local Funds).

430. This 12-feet bridge, which was in progress last year, has been completed at a cost of Rs. 1,449.

Constructing sluice and regulating bridge over Chittiwah. (Local Funds).

431. Begari Canal Division.—The construction of this work has been kept back on account of an encroachment of the river on its site. Estimate, Rs. 6,143; expenditure, Rs. 2,056.

432. Sukkur Canal Division.—This is an iron girder bridge of two spans of 22 feet each, 7 feet clear to bottom of girder over the high-water level, to allow for passage of boats. The girders are of rolled wrought iron, 12 inches in depth, laid 4 feet apart; they weigh 69 lbs., and have a calculated breaking weight of 27 tons; they are wind-braced by iron tie-rods. Planking, 8 inches thick, is laid on them to form the roadway. Width of roadway 13 feet, and gradient of approaches is 1 to 20. Estimate, Rs. 5,528; expenditure, Rs. 3,761.

433. Five culverts, of spans of from 5 to 8 feet, have been built over zemindari canals. The gradient of the approaches is limited to 1 in 20, and the breadth of roadway is 12 feet. One culvert has been converted into a regulator. Cost Rs. 3,022.

Culverts on the Ruk and Gaeheja Road. (Local Funds).

434. Kurrachee Collectorate Canals.—The bridge over the Rosswah at Kotri is on the road to Jerruck. It is built over an inconvenient back-water from the Indus, is 7 spans of 15 feet, of brick masonry, and was completed in February, thus proving of great convenience to the inhabitants of Kotri. Cost Rs. 5,524.

Bridge over the Rosswah at Kotri.

435. A single arch brick masonry bridge, of 25 feet span and 5 feet rise, height of abutments 8 feet, has been built to within 5 feet of springing. Estimate, Rs. 3,042; expenditure, Rs. 973.

Bridge over the Kulriwah, on the Goolam Allah, or Baksa Road.

Bridges on road from Shikarpur to Jacobabad.

436. Jacobabad.—Six culverts, of spans of from 6 to 8 feet, have been completed at a cost of Rs. 6,325.

437. The floods, combined with the labour difficulty, have prevented the completion of the works. Out of 19 culverts, of from 4 to 10 feet span, one remains to be completed. Estimate, Rs. 10,780; expenditure, Rs. 10,068.

Rebuilding bridges on road from Thul to Jacobabad.

Culverts on road from Thul to Jacobabad.

438. Floods have prevented brick-making in time, so that the work could not be begun before the end of January. Estimate, Rs. 7,642; expenditure, Rs. 1,132.

Bridge over the Sonewah at Thul.

439. A single arch, of 25 feet span, has been constructed over the Sonewah at Thul, at a cost of Rs. 3,277.

440. **Kurrachee Collectorate Canals.**—This is a brick masonry structure of 3 spans of 32 feet, and a rise of 9 feet. The foundations are sunk 11 feet below the river-bed, which is fine sand. The bed under the bridge is of brick pavement 2 feet thick, extending to 20 feet on the down stream side of the bridge. The blocks of the left-bank abutment and of two of the piers have been got down to their proper level, and the right-bank locks were in progress. Estimate, Rs. 17,245; expenditure, Rs. 3,861.

441. **Fulaili Division.**—This is a wrought iron, or screw pile, bridge, similar to those already constructed on the canal. It consists of three spans of 30 feet, and two of 28 feet. The roadway is 14 feet wide, carried on light girders, with cross planking. Estimate, Rs. 16,430; expenditure, Rs. 3,286.

IV.—ACCOMMODATION FOR TRAVELLERS.

Dharmsalla at Dhondsi. (Local Funds).

442. **Dharwar.**—A dharmsalla at Dhondsi has been completed for Rs. 626.

Dharmsalla at Hulkoti. (Local Funds).

443. A 3rd class dharmsalla has been built at Hulkoti for Rs. 654.

Dharmsalla at Soundulga. (Local Funds).

444. **Belgaum.**—A dharmsalla has been built at Soundulga for Rs. 2,964.

445. **Kala'dgi.**—Dharmsallas have been constructed—at Mánur for Rs. 1,499; at Dharmasalla in the Kaládgi District. (Local Funds). Gergaon for Rs. 1,500; at Chudchan for Rs. 1,598; and at Hippargi for Rs. 2,462.

Dharmsalla at Chokak. (State Funds).

446. **Kolha'pur.**—A dharmsalla has been commenced at Chokak. Estimate, Rs. 4,795; expenditure, Rs. 59.

Dharmsalla at Mokhada. (Local Funds).

447. **Northern Konkan.**—A dharmsalla at Mokhada has been completed for Rs. 3,176.

Dharmsalla at Kásará. (Local Funds).

448. At Kásará a new dharmsalla has been built for Rs. 3,308.

Rest-house, Sháhápúr. (Local Funds).

449. A new rest-house, to replace the travellers' bungalow, Sháhápúr, has been constructed for Rs. 2,924.

450. **Na'sik.**—This memorial consists of a drinking fountain and a serai. The former was completed in 1874-75 by the late Local Funds Department, and the latter brought to completion up to one-fourth of the superstructure. The design for the serai provides for block in course and lime masonry, with terraced roof resting on teak girders. This is now under modification, and a revised project for the remaining work, providing for a terraced roof on stone arches, is under preparation. The work is suspended. Expenditure, Rs. 231.

Dharamsalla at Samádra. (Local Funds).

451. **Kaira.**—A dharamsalla on the Ahmedabad and Kaira road has been completed for Rs. 2,028.

Chauris in Kaira Districts. (Deposit Works).

452. Six village chauris, at several points in the Kaira Districts, have been commenced. Estimate, Rs. 5,523; expenditure, Rs. 1,147.

453. **Shikarpur.**—The old bungalow having tumbled down, a new one, with a sitting-room, and two bed-rooms, and bath-rooms, is to be built. The walls to be brick and lime; floors of lime plaster, and roof supported on teak beams. Servants' quarter, of 2 rooms, will be provided for in an out-building. No work has been done as yet, materials only having been collected. Estimate, Rs. 5,840; expenditure, Rs. 2,142.

Musafirkhana at Girori. (Local Funds).

454. **Eastern Nara Division.**—A Musafirkhana at Girori has been constructed for Rs. 2,077. Estimated amount, Rs. 2,130.

MISCELLANEOUS PUBLIC IMPROVEMENTS.

I.—MUNICIPAL WORKS.

455. **Bombay.**—A bridle-ride, 40 feet in width, and a footpath, partly 12 feet and partly 15 feet in breadth, have been constructed from the Ride and Foot-path along the Sea-face of the Back Bay Reclamation. Cooperage Over-bridge to the level crossing at Chowpatty. The path has been kerbed on both sides up to the Hindu Burning-ground. The whole of the ride has been turfed. Wrought-iron railings, mounted on masonry walls, with entrance gates complete, have been erected at the entrances on the Chowpatty and Colába sides. Cost Rs. 14,411.

456. The wooden drain, under the B. B. & C. I. Railway, south of the Marine Lines, has been removed, and a masonry drain, 345½ feet in length, from the Queen's Road to the sea, has been constructed in its place. The end portion of this drain near the sea, 5 feet in length, is entirely of roughly-dressed blue basalt stone, its mouth having a wrought-iron gate to prevent stones, refuse, &c., getting into the drain. A brick and lime masonry barrel drain, 70 feet in length and 3 feet in diameter, has been substituted for the wooden one between the compound of the 20th Regiment N. I. Hospital and the Queen's Road. Cost Rs. 3,145.

457. Four roughly-dressed blue basalt dry stone ramps have been constructed, two Ramps to the Back Bay Sea-wall. 50 feet by 20 feet each, one 63 feet by 20 feet, and one 30 feet by 20 feet. Cost Rs. 3,016.

458. **Dharwar.**—A considerable quantity of tank excavation has been in progress in various parts of the Dharwar District, in order to provide employment as famine relief works. The expenditure to the close of the year amounted to Rs. 23,907.

Well at Bail Hongal. (Local Funds). 459. **Belgaum.**—The well at Bail Hongal is approaching completion. Estimate, Rs. 4,899; expenditure, Rs. 4,490.

Well at Sampgaon. (Local Funds). 460. The well at Sampgaon is being made deeper, and otherwise improved. Estimate, Rs. 3,581; expenditure, Rs. 1,990.

461. Two wells and a small tank are under construction at Karikutti, in order to furnish employment to labourers in distress. Estimated cost of the three works, Rs. 12,179; expenditure, Rs. 6,270.

Tank at Kudulga. (Local Funds). 462. A tank has been completed at Kudulga for Rs. 2,791.

Tank at Shedball. (Local Funds). 463. The excavation, filling in foundations, and superstructure, &c., of a tank at Shedball, have been in progress. Estimate, Rs. 5,420; expenditure, Rs. 2,970.

Removing rock in the Jugburi River, near Khed. (Local Funds). 464. **Ratna'giri.**—The work of removing the rocks in the Jugburi River has been nearly completed. Estimate, Rs. 844; expenditure, Rs. 808.

Improving the inner ditch of Arkilla at Bijapur. (Famine Relief). 465. **Kala'dgi.**—The ditch has been filled in in portions and deposits of rubbish removed. Estimate, Rs. 14,771; expenditure, Rs. 6,664.

466. The following tank works have been in progress during the year. They are constructed with a view to supply water to the population, and to provide work for the people suffering from famine:—

Tank.						Estimate.	Expenditure.
						Rs.	Rs.
At Belgi	...	...	...	...	...	5,683	2,151
" Sunag	...	...	...	...	...	4,546	1,122
" Sindgi	...	...	...	...	...	6,040	3,957
" Sirur	...	...	...	...	...	2,077	1,065
" Amengad	...	...	...	...	...	4,046	1,709
" Manur	...	...	...	...	...	2,500	1,526
" Karur	...	...	...	...	...	9,904	932
" Tulsigiri	...	...	...	...	...	7,956	3,934
" Muddebihal	...	...	...	...	...	6,115	2,995

- Well at Arkeri. (Local Funds). 467. A well has been constructed at Arkeri at a cost of Rs. 2,087.
- Wells in the Kaládgí District (Local Funds). 468. Three wells are under construction at Danur, Lalsingi, and Sungápur. Total estimate, Rs. 7,009; outlay, Rs. 5,492.
- Well at Honwar. (Local Funds). 469. A well has been completed at Honwar for Rs. 3,003.
- Boat at Kundargi. (Local Funds). 470. A boat is being provided for the River Ghatprabha at Kundargi. Estimate, Rs. 2,000; expenditure, Rs. 161.
- Inchalkaranji Tank. (State Funds). 471. **Kolha'pur**.—The work of lining and puddling the storage tank has been completed. Estimate, Rs. 17,540; expenditure, Rs. 14,870.
- Kágál Water-supply. (State Funds). 472. The improvement of the head-works of the Kágál water-supply has been completed at a cost of Rs. 4,810.
- Jamkhandi Water-works. (State Funds). 473. The water-works in the Chief of Jamkhandi's Territory have been completed at a cost of Rs. 51,925.
- Daji Pandit's Well. (State Funds.) 474. This well has been completed for Rs. 4,342.
- Two wells on Kolhápur and Miraj Road. (State Funds). 475. These wells on the Kolhápur and Miraj road are nearly completed. Estimate, Rs. 3,484; expenditure, Rs. 2,282.
- Kulumba Bunds. (State Funds). 476. The work of improving the temporary bunds and works at Kulumba has been completed at a cost of Rs. 813.
- Tank at Sarud. (State Funds). 477. The improvements to the tank at Sarud have been completed at a cost of Rs. 5,168.
478. The water-works to supply the town of Kolhápur with water have been under construction, and have made fair progress. Estimate, Rs. 2,20,279; expenditure, Rs. 73,978. The temporary head-works have been completed at a cost of Rs. 8,846.
- Kolhápur Water-works. (State Funds).
- Inchalkaranji Water-works. (State Funds). 479. The Inchalkaranji water-works have been completed at a cost of Rs. 83,853.
480. **Satara**.—The well at Shirala, in the Wálwa Taluka, has been sunk to a depth of 56½ feet, and the steining raised to a height of 20 feet. Estimate, Rs. 3,058; expenditure, Rs. 1,538.
- Well at Shirála.
481. **Shola'pur**.—A tank is being formed at Wadali on the Sholápur and Bársi Road, by throwing a dam across a nulla that runs at a distance of a quarter of a mile to the east of the village. The dam is 1,150 feet long, 10 feet wide at top, with the usual slopes on its face and reverse sides. It is formed of earth in layers, 9 inches thick, well rammed; the face being pitched with dry stone, and the crest coated with moorum. A waste-weir channel is being cut in hard moorum. Expenditure, Rs. 2,960.
- Tank at Wadali. (Famine Relief).
482. The bed of the Mandrup Tank is of an irregular oblong shape, 550 by 475 feet, and contains 4 feet of silt. It is being improved by excavating the silt, renewing the bund, extending one end of it, so as to prevent drainage water from the village entering the tank, and by lengthening the other end, so that a natural fall in the ground may be taken advantage of for a waste weir; pitching the extremity with rubble stones, and by excavating a catch-water gutter "feeder" to increase the gathering ground. Expenditure, Rs. 5,007.
- Tank at Mandrup. (Famine Relief).
483. The tank at Timbarni, on the Poona and Hyderabad Road, also has a bed of an irregular oblong shape, 72,000 square feet in area, and containing an average of 4 feet of silt. It is being improved by excavating the silt, renewing and increasing the old bund with slopes of 3 to 1 and 2 to 1 at face and rear, respectively, pitching the front slope with dry stone, and by excavating a "feeder" to increase the gathering ground. The bund is 880 feet long, and 12 feet wide at top, the height of the highest point being 18 feet. Expenditure, Rs. 3,385.
- Tank at Timbarni. (Famine Relief).
484. A tank at Walsung, on the Sholápur and Akalkot Road, is being formed by throwing a dam across a nulla near the village. The bund, which is 638 feet long, is being constructed of earth in layers, 9 inches thick, well rammed, the front and rear slope being 3 to 1 and 2 to 1, respectively; the front slope is pitched with dry stone obtained in the bed; a waste weir is being excavated in hard moorum. Expenditure, Rs. 5,263.
- Tank at Walsung. (Famine Relief).

485. The tank at Nandvi, on the Sholapur and Bijapur Road, is being improved by clearing the bed of its silt deposit, removing the old bund, pitching the front slope with dry stone obtained in the bed, cutting a waste weir in hard moorumi, and by excavating a feeder to increase the gathering ground. Estimate, Rs. 2,563; expenditure, Rs. 2,420.

486. The Motibagh Tank is within the camp limits of Sholapur. Of late years it dries up almost completely by the close of the hot season, and, in consequence, the marshy ground below the bund is injurious to the health of the residents. To afford employment to labourers in distress at the present juncture, and to increase the storage, so that a greater supply of water may be obtained, the bed of the tank is being cleared of silt, and the material thus excavated is being deposited on the reverse side of the bund, and also on the marsh below it, so as to raise the surface of the swampy ground well above the water level. Longitudinal and transverse drains are also being formed to convey the drainage into the natural water channels. Estimate, Rs. 43,362; expenditure, Rs. 22,728.

487. Northern Konkan.—The masonry dam at Matheran and approach roads have been nearly completed. Estimate, Rs. 16,765; expenditure, Rs. 16,452.

488. Na'sik.—These useful works, a description of which is given in the report for 1875-76, have been completed. The works, however, do not even yet sufficiently supply the wants of the townspeople, and certain improvements are in contemplation. Cost Rs. 5,059.

489. Khandesh.—The Jirwa Tank was commenced as a relief work, but subsequently abandoned as such. The work is mostly masonry and consists principally in building a bund across a nulla. Estimate, Rs. 3,172; expenditure, Rs. 1,484.

490. The clearance of, and improving, the Bedwad Tank was commenced as a relief work, but stopped after an expenditure of Rs. 354.

491. Surat and Broach.—These owaras are each 56 feet long and 20 feet broad, having masonry walls, 2 feet thick on both sides, and 1½ feet and 1 foot in front and rear, with masonry foundations. There are 28 steps, each 1 foot wide; 5 landings, each of 4 feet, one of 6 feet, and one of 2 feet wide, on foundations partly of brick and mud, and partly of lime masonry covered with Porebunder slabs. Masonry parapets, 2½ feet high on both sides, have been constructed to prevent accidents. A portion, 50 feet by 50 feet, of the tank in front of each owara, has been excavated to a mean depth of 4 feet. Completed at a cost of Rs. 5,178.

492. The owara consists of two side-walls, 2 feet wide each, and steps in the middle, 20 feet in length. Completed for Rs. 2,422.

493. The excavation of the well has been completed, and the brick and lime masonry has been carried to a depth of 42 feet, resting on a wooden curb. Estimate, Rs. 3,920; expenditure, Rs. 3,341.

494. Kaira.—Fourteen wells have been under construction in various parts of the Kaira Districts, at a total estimated cost of Rs. 23,763. The first eight of these wells have been finished for Rs. 12,015, and the others are in progress, with an expenditure on them aggregating Rs. 3,331.

495. Fourteen tanks have been under construction in the Kaira Districts, at a total estimated cost of Rs. 47,625. Of these five have been completed for Rs. 10,930, and the others are in progress with an aggregate outlay on them of Rs. 22,091.

496. Ahmedabad.—The tank at Pheydra, in the Dhandhuka Taluka, having silted up, it is proposed to deepen it by excavating to within 2 feet of the level of the stratum, in which the water is found to become brackish; also to provide a retaining wall on the side exposed to the action of the ripple caused by the high wind in the monsoon, which breaks away the earth. A masonry ghât, 25 feet in length and 15 feet broad in the clear, with side-walls, 1 foot 6 inches wide, is to be made. The tank being full of water, only the collection of materials, such as chunam, bricks, stones, &c., has been undertaken. Estimate, Rs. 14,294; expenditure, Rs. 2,317.

II.—HARBOUR IMPROVEMENTS.

497. **Bombay.**—The sand-filling work has been finished to the level finally decided upon, but the stone bulwark has not been completed according to the original design. It is not, however, proposed to do more to the bulwark until after the south-west monsoon of 1877, when it will be practicable to form a better opinion as to what will be absolutely necessary. Estimate, Rs. 1,29,910; expenditure, Rs. 79,507.

498. **Aden.**—This is a shed 50 feet by 35 feet, having a curved corrugated iron roof, with ornamental ridge ventilator, supported on 8 iron columns, 4 on each side. It is intended for the use of the passengers to and from the shipping in the harbour. Cost Rs. 5,016.

499. **Ratna'giri.**—A boat, with red light, has been moored at the entrance of the Málwan Harbour, and the position of the light on the beach altered. Cost Rs. 600.

500. **Surat and Broach.**—A masonry retaining wall has been constructed of the same profile and general appearance as the portion of the old wall still standing. The foundations have been carried down to the level of low-water mark, by driving a row of sheet piling in front, and gauge piles at intervals in rear, tied together with iron rods. The wooden railing of the old wall, being also much decayed and unsightly in appearance, has been replaced by an iron one, which extends also along the new portion. Completed for Rs. 49,701.

501. **Kurrachee Harbour Works.**—The new Light and Light-tower were the only new works of importance commenced during the year.

502. The break-water continued free from damage, as during the previous year, and this time during a monsoon heavy beyond the average. The iron beacon on the outer end was, however, somewhat bent, and its head displaced, though 25 feet above highest tide, so that it had to be removed and refixed. Except this, the only work done on the break-water was the prolongation of the concrete capping on the part where settlement has practically ceased, for a length of 215 feet, terminating now at 474 feet from shore end. The last 70 feet is only half the width of the break-water on the harbour side blocks, as it was not thought prudent, at present, to load the sea side row at that part, which, though moved in the previous season, shows still a slight tendency to overhang to seaward. The expenditure on the break-water, as above, during the year, was Rs. 5,024.

503. The chief outlay during the year was on the dredging of the Entrance Channel, on which Rs. 42,182* was expended. 58,229 tons were dredged, and 672 tons of stone removed by the diving party, who also loosened hard material for the dredge. The work chiefly consisted in rectification of the channel to its width of 500 feet and depth of 20 feet, but the hard material also removed is, of course, so much of a gain. In addition to a general tendency to narrowing throughout, the special shoaling at the inner end of the Channel still takes place, and this tendency, no doubt, will continue much as at present, so long as the abrupt termination of the groyne, and the diversion by Deep-water Point are left unremedied. Unfortunately the present dredging plant is getting past its work, and the question of providing new and more powerful plant, which has been already mooted, begins to call for serious attention.

504. On the "New Channel" leading to the Native Jetty, and thence eastward to the Chinna Creek, the partial aid to improvement sanctioned, and commenced during the previous year, was completed in the shape of extending the stone pitching, or groyne, of the west and north banks of the Channel at intervals, so as to secure the proper line for scour action. On this Rs. 5,786 was expended during the year, in addition to Rs. 1,720 under the head of "Repairs," in maintaining the lines of the Channel as previously formed.

505. As regards the harbour generally, the report on the periodical survey of January last will give details.

506. It may, however, be noted here that, as regards the entrance, a balance is being fairly maintained with the aid of the periodical dredging.

507. In the harbour below Keamari the general improvement of water space steadily, but slowly progresses. Here, however, there is the drawback of

Lower Harbour. accumulation in the narrow deep-water line of the west channel anchorage, for which the enlargement on the east side, though much more marked, is not likely to compensate without some artificial aid. The scour works to width rather than depth, so that dredging is required to direct and intensify its action, as well as to remove hard material here and there.

508. The Keamari anchorage shows some further loss of water space, less, however, by rather over one-fourth than the average of the five previous years, and representing nearly two-fifths of the material carried down during the same period from the "New Channel." Though the shoaling still goes on chiefly at the upper or north end, there is a slight improvement at the south end, and altogether there seems no reason to dread permanent injury to this anchorage.

509. In the "New Channel" to the Native Jetty, and Chinna Creek, improvement continues steadily, though slowly, so that aid by dredging hard material, and by inexpensive training works, would be of great use in accelerating the enlargement, every advance of which is permanent gain, directly felt by the native sea-going and general lighterage trade, whereas the temporary deposit in the Keamari anchorage of a portion of the scoured material, can hardly be said to have caused serious inconvenience to the trade of the port.

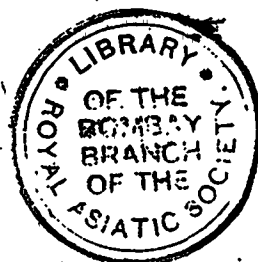
510. The great want of a good light for the harbour is now in course of being remedied, a first order revolving light sent out for, but not required at New Light and Light-tower. Coconada, having been transferred to Kurrachee. The building of the light-tower to receive it has been commenced.

511. The revised design and estimate for the ship pier at Keamari are in preparation, to suit alteration of site and of other conditions, as it has been determined that it is to form a part of the State Railway system.

512. The transfer of plant to the Madras Harbour Works, including the "Titan," "Goliath," block trucks, &c., realized Rs. 29,452. Also 50 stone waggons, &c., were sold to the Indus Valley State Railway for Rs. 14,006, being, in each case, half price after some years' use.

513. Temporary quarantine and hospital buildings, for the reception of the crews and passengers of infected vessels, were completed at a total cost of Rs. 6,471. These comprise one shed for Europeans, with cook-room and bath-room; three sheds for native males, with cook-room; and one for native females. Also two small hospital sheds—one for cholera, and the other for small-pox—with 2 rooms in each. Also a boat pier, on which are latrines, and a water-tank, from which piping is led for supply of the buildings.

514. The remaining works comprising repairs, not only of the harbour works, but also of the Customs and Commissariat piers, Customs buildings at Native Jetty, &c., and all buildings at Manora transferred in 1875-76 from the charge of the Executive Engineer, Lower and Central Sind, call for no particular description.



No. I.

The Grants and Outlay for the Public Works of the Bombay Presidency during the Year 1876-77 (exclusive of Railways) were as follows :—

WORKS.	Grant.	Outlay.	Saving.	Excess.
	Rs.	Rs.	Rs.	Rs.
Imperial, Ordinary	15,00,320	13,18,864	1,81,456	...
Do. Agricultural	19,27,892	18,26,936	1,00,956	...
Provincial Funds	25,31,410	24,25,711	1,05,699	...
Contributions	10,18,068	8,83,617	1,34,451	...
Local Funds	31,20,862	25,71,788	5,49,074	...
Total ...	1,00,98,552	90,26,916	10,71,636	...
<i>Establishment.</i>				
Imperial, Ordinary	3,51,680	3,51,680	...	...
Do. Agricultural	5,79,768	5,30,616	49,152	...
Provincial Funds	9,97,000	7,29,415	2,67,585	...
Contributions	10,368	10,368	...	...
Local Funds	2,98,436	2,72,847	25,589	...
Total ...	22,37,252	18,94,926	3,42,326	...
Grand Total ...	1,23,35,804	1,09,21,842	14,13,962	...

Cost of Establishment, Rs. 18,94,926, gives a percentage of 23·27 on the Expenditure, Imperial, Provincial, and Local, of Rs. 81,43,299. Including Contributions and Expenditure debitable to Local Loans and Forest Department, the percentage is 20·30.

The figures shown in column "Grant" are the modified grants as they stood at the close of the year.

The figures given above under "Grant" and "Outlay" are exclusive of Expenditure in England on the Ordinary and Extraordinary grant, which amounted to Rs. 10,791, but inclusive of reductions and additions in Suspense Balances.

No. II.

IMPERIAL, ORDINARY.

STATEMENT showing the Grants and Outlay for Public Works under the Service Heads during the Year 1876-77.

SERVICE HEADS.	Grant.	Outlay.	Saving.	Excess.
	Rs.	Rs.	Rs.	Rs.
<i>Original Works.</i>				
Military	8,31,200	7,05,673	1,25,527	...
Civil Buildings	92,220	87,223	4,997	...
Miscellaneous Public Improvements ...	6,000	3,566	2,434	...
Total ...	9,29,420	7,96,462	1,32,958	...
<i>Repairs.</i>				
Military	4,80,000	4,46,461	33,539	...
Civil Buildings	38,394	25,995	12,399	...
Miscellaneous Public Improvements ...	28,056	26,983	1,073	...
Total ...	5,46,450	4,99,439	47,011	...
Establishment	3,51,680	3,51,680	...	...
Tools and Plant	24,450	22,963	1,487	...
Grand Total ...	18,52,000	16,70,544	1,81,456	...

No. III.

IMPERIAL, AGRICULTURAL.

STATEMENT of Grants and Outlay for Public Works under the Service Heads during the Year 1876-77.

SERVICE HEADS.	Grant.	Outlay.	Saving.	Excess.
	Rs.	Rs.	Rs.	Rs.
<i>Extraordinary.</i>				
Original Works	5,27,565	5,19,070	8,495	...
Repairs	...	648	...	648
Establishment	96,828	1,04,499	...	7,671
Tools and Plant	25,807	27,628	...	2,321
Total ...	6,49,700	6,51,845	...	2,145
<i>Ordinary.</i>				
Original Works	5,86,660	5,50,519	36,141	...
Repairs	7,52,060	7,09,711	42,349	...
Establishment	4,82,940	4,26,117	56,823	...
Tools and Plant	36,300	19,360	16,940	...
Total ...	18,57,960	17,05,707	1,52,253	...
Grand Total, Extraordinary and Ordinary...	25,07,660	23,57,552	1,50,108	...

No. IV.

PROVINCIAL.

STATEMENT showing the Grants and Outlay for Public Works under the Service Heads during the Year 1876-77.

SERVICE HEADS.	Grant.	Outlay.	Saving.	Excess.
<i>Original Works.</i>	Rs.	Rs.	Rs.	Rs.
Civil Buildings	11,24,218	11,01,654	22,564	...
Communications	7,35,533	6,88,931	46,602	...
Miscellaneous Public Improvements ...	3,000	2,296	704	...
Total ...	18,62,751	17,92,881	69,870	...
<i>Repairs.</i>				
Civil Buildings	3,00,087	2,70,546	29,541	...
Communications	3,06,791	3,06,791	...	...
Miscellaneous Public Improvements ...	19,781	16,380	3,401	...
Total ...	6,26,659	5,93,717	32,942	...
Establishment	9,97,000	7,29,415	2,67,585	...
Tools and Plant	42,000	38,180	3,820	...
Profit and Loss	...	933	...	933
Grand Total ...	35,28,410	31,55,126	3,73,284	...

No. V.

ABSTRACT of Expenditure from Contributions during the Year 1876-77.

SERVICE HEADS.	Contributions.	Outlay.	Saving.	Excess.
	Rs.	Rs.	Rs.	Rs.
<i>Original Works.</i>				
Agricultural ...	57,201	46,443	10,758	...
Civil Buildings ...	1,59,205	90,381	68,824	...
Communications ...	1,57,474	1,21,578	35,896	...
Miscellaneous Public Improvements ...	18,095	4,402	13,693	...
Total ...	3,91,975	2,62,804	1,29,171	...
<i>Repairs.</i>				
Agricultural ...	19,437	14,464	4,973	...
Civil Buildings ...	3,216	2,981	235	...
Communications ...	6,02,276	6,02,205	71	...
Miscellaneous Public Improvements ...	1,164	1,163	1	...
Total ...	6,26,093	6,20,813	5,280	...
Establishment ...	10,368	10,368	...	...
Grand Total ...	10,28,436	8,93,985	1,34,451	...

No. VI.

LOCAL.

STATEMENT showing the Grants and Outlay for Public Works under the Service Heads during the Year 1876-77.

SERVICE HEADS.	Grant.	Outlay.	Saving.	Excess.
	Rs.	Rs.	Rs.	Rs.
<i>Original Works.</i>				
Civil Buildings	2,39,869	1,65,289	74,580	...
Communications	11,69,526	9,80,982	1,88,544	...
Miscellaneous Public Improvements ...	6,70,952	4,92,521	*1,78,431	...
Total ...	20,80,347	16,38,792	4,41,555	...
<i>Repairs.</i>				
Civil Buildings	85,365	64,699	20,666	...
Communications	7,23,962	6,98,484	25,478	...
Miscellaneous Public Improvements ...	2,06,595	1,48,730	57,865	...
Total ...	10,15,922	9,11,913	1,04,009	...
Establishment	2,98,436	2,72,847	25,589	...
Tools and Plant	24,593	21,083	3,510	...
Grand Total ...	34,19,298	28,44,635	5,74,663	...

No. VII.

ABSTRACT of Expenditure from Grants-in-aid to Provincial Works from Local Funds during the Year (taken from Statement No. VII.).

SERVICE HEADS.	Contributions.	Outlay.	Saving.	Excess.
	Rs.	Rs.	Rs.	Rs.
Establishment	2,41,029	2,24,791	16,238	...

No. VIII.

*ABSTRACT of Expenditure from all descriptions of Funds during the Year
1876-77.*

SERVICE HEADS.	Imperial.	Provincial.	Grant-in-aid from Local Funds.	Contributions.	Local.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
<i>Original Works.</i>						
Military	7,05,673	...	...	...	...	7,05,673
Agricultural	10,69,589	...	...	46,443	...	11,16,032
Civil Buildings	87,223	11,01,654	...	90,381	1,65,289	14,44,547
Communications	...	6,88,931	...	1,21,578	9,80,982	17,91,491
Miscellaneous Public Improvements	3,566	2,296	...	4,402	4,92,521	5,02,785
Total	18,66,051	17,92,881	...	2,62,804	16,38,792	55,60,528
<i>Repairs.</i>						
Military	4,46,461	...	...	...	...	4,46,461
Agricultural	7,10,359	...	...	14,464	...	7,24,823
Civil Buildings	25,995	2,70,546	...	2,981	64,699	3,64,221
Communications	...	3,06,791	...	6,02,205	6,98,484	16,07,480
Miscellaneous Public Improvements	26,983	16,380	...	1,163	1,48,730	1,93,256
Total	12,09,798	5,93,717	...	6,20,813	9,11,913	33,36,241
Establishment	8,82,296	7,29,415	2,24,791	10,368	48,056	18,94,926
Tools and Plant	69,951	38,180	...	...	21,083	1,29,214
Profit and Loss	...	933	...	...	...	933
Grand Total	40,28,096	31,55,126	2,24,791	8,93,985	26,19,844	1,09,21,842

No. IX. IMPERIAL.

STATEMENT showing the Details of Statements Nos. II. and III.

					TOTAL OF EACH STATION,		
					Original Works.	Repairs.	Total.
					Rs.	Rs.	Rs.
<i>Military.</i>							
Buildings for accommodation of European Troops.	Aden ...	...	...	...	10,706	21,168	31,874
	Ahmedabad...	...	...	...	1,58,376	5,754	1,59,130
	Ahmednagar	...	...	...	893	10,337	11,230
	Baroda ...	...	...	...	2,298	2,273	4,571
	Belgaum ...	...	...	...	9,056	18,607	27,663
	Bombay ...	...	...	...	3,800	27,194	30,494
	Kolaba ...	...	...	...	34,990	31,155	66,145
	Deolali ...	...	...	...	4,080	13,634	17,714
	Ganesh Khind	...	...	...	.....	761	761
	Gizri ...	...	...	...	132	.....	132
	Hyderabad ...	...	...	...	1,134	6,784	7,918
	Khandála ...	...	...	...	.....	3,440	3,440
	Kirkee ...	...	...	...	7,715	13,165	20,880
	Kolhāpur ...	...	...	...	.....	74	74
	Kurrachee ...	...	...	...	2,014	30,211	32,225
	Mālegaon ...	...	...	...	.....	504	504
	Poona, Ghorepuri, and Wanowri	...	...	...	35,363	31,103	66,466
	Purandhar ...	...	...	...	7,575	6,155	13,730
	Satara ...	...	...	...	16,583	4,967	21,550
	Sirur ...	...	...	...	.....	597	597
	Sukkur ...	...	...	...	.....	529	529
	Surat ...	...	...	...	.....	135	135
	Tithal ...	...	...	...	.....	449	449
	Vingorla ...	...	...	...	.....	117	117
Total ...					2,89,215	2,29,113	5,18,328
Buildings for accommodation of Native Troops.	Aden ...	...	...	...	30,144	8,977	39,121
	Ahmedabad	...	...	...	181	649	830
	Ahmednagar	...	...	...	1,148	323	1,476
	Bandera ...	...	...	...	2,942	795	3,737
	Baroda ...	...	...	...	3,114	1,349	4,463
	Belgaum ...	...	...	...	1,733	807	2,540
	Bhuj ...	...	...	...	377	689	1,066
	Bombay ...	...	...	...	2,402	17,917	20,319
	Dharwar ...	...	...	...	11,297	407	11,704
	Ganesh Khind	...	...	...	.....	1,010	1,010
	Gorānāri ...	...	...	...	.....	198	198
	Hyderabad ...	...	...	...	14	2,641	2,655
	Jacobabad ...	...	...	...	24,187	5,616	29,803
	Kalādgi ...	...	...	...	.....	135	135
	Kashmor ...	...	...	...	.....	465	465
Carried forward ...					77,539	41,983	1,19,522

				TOTAL OF EACH STATION.		
				Original Works.	Repairs.	Total.
				Rs.	Rs.	Rs.
Brought forward ...				77,539	41,983	1,19,522
<i>Military—continued.</i>						
Buildings for accommodation of Native Troops.	Kirkee	...	...	5,021	872	5,893
	Kolhápur	...	...	876	1,487	2,363
	Kurrachee	...	...	20,976	4,548	25,524
	Málegaon	...	...	573	552	1,125
	Poona	...	...	6,940	2,747	9,687
	Rájkot	...	...	4,841	5,067	9,908
	Satara	...	...	409	2,944	3,353
	Sholápur	...	...	2,485	53	2,538
	Sirur	...	...	.....	150	150
	Sui	...	...	.....	510	510
	Sanri	...	...	.....	248	248
	Surat	...	...	3,482	852	4,334
	Tanna	...	...	8,881	774	9,655
	Toj	...	...	.....	190	190
Total ...				1,32,023	62,977	1,95,000
Fortifications	...	...	...	49,762	7,450	57,212
Cantonment Works	...	...	...	47,972	74,029	1,22,001
Ordnance	...	...	...	1,27,368	28,714	1,56,082
Commissariat	...	...	...	46,077	26,304	72,381
Staff	...	...	...	15,693	2,125	17,818
Naval	...	...	...	26,028	15,749	41,777
				7,34,138	4,46,461	11,80,599
Less—Expenditure in England and decrease in Suspense Balances	...	...	...	28,465	.....	28,465
Total ...				7,05,673	4,46,461	11,52,134
<i>Civil Buildings.</i>						
Post	...	...	...	10,787	7,464	18,251
Telegraph	...	...	...	54,792	6,392	61,184
Mint	...	...	...	4,552	1,370	5,922
Currency	...	...	...	1,034	642	1,676
Salt	...	...	...	16,058	9,642	25,700
Miscellaneous	...	...	...	.....	485	485
Total ...				87,223	25,995	1,13,218
<i>Miscellaneous Public Improvements.</i>						
Harbours...	...	...	...	4,250	24,647	28,897
Light-houses	...	...	...	4,945	2,336	7,281
				9,195	26,983	36,178
Less—Expenditure in England under Suspense Balances	...	...	...	5,629	.....	5,629
Total ...				3,566	26,983	30,549
Total Works	...	...	...	7,96,462	4,99,439	12,95,901
„ Establishment	...	...	...	.....	.....	3,51,680
„ Tools and Plant	...	...	...	.....	.....	22,963
Grand Total ...				.....	.....	16,70,544

				TOTAL OF EACH STATION.		
				Original Works.	Repairs.	Total.
				Rs.	Rs.	Rs.
<i>Irrigation, Extraordinary.</i>						
Mitrow Canal (Eastern Nára Works)	...	...	...	—223	.....	—223
Háthmati Canal	...	...	...	20,773	37	20,810
Pánjhra ...	...	...	...	15,732	.....	15,732
Palkhair Canal	...	...	...	984	.....	984
Mutha do.	...	...	...	4,67,854	611	4,68,465
Ekruk Tank	...	...	...	20,199	.....	20,199
				5,25,319	648	5,25,967
Less—Decrease under Suspense Balances and receipts on Capital Account	...	...	...	6,249	.....	6,249
				5,19,070	648	5,19,718
Establishment	...	...	...	.....	.....	1,04,499
Tools and Plant	...	...	...	.....	.....	27,628
Total	...	...	...	.....	.....	6,51,845
<i>Ordinary.</i>						
Kashmor and Begári Bund	...	...	...	66,121	.....	66,121
Desert Canal	...	...	...	11,524	511	12,035
Begári do.	...	...	...	1,41,352	.....	1,41,352
Kasimpur Bund	...	...	...	52,493	.....	52,493
Sakhar Canal	...	...	...	28,606	.....	28,606
Eastern Nára Works	...	...	...	23,703	.....	23,703
Ghár Canal	...	...	...	64,219	.....	64,219
Western Nára	...	...	...	32,714	.....	32,714
Fulaili Canal	...	...	...	4,496	.....	4,496
Eastern Delta Survey	...	...	...	361	.....	361
Jerruck Canal	...	...	...	—179	.....	—179
Khári Irrigation	...	...	...	6,710	.....	6,710
Tapti Canal	...	...	...	12	—8	4
Hartala Tank	...	...	...	1,468	.....	1,468
Mhaswad do.	...	...	...	17,955	.....	17,955
Warali	...	...	...	9	.....	9
Ojhar Canal	...	...	...	5,670	880	6,550
Sholápur and Ahmednagar (Bhore Tank)	...	...	...	10,565	.....	10,565
Nira Canal	...	...	...	985	.....	985
Neher Tank (Yerla)	...	...	...	18,419	.....	18,419
Pingli do.	...	...	...	137	.....	137
Mhaswad Tank	...	...	...	358	.....	358
Maini do.	...	...	...	146	.....	146
Krishna Canal	...	...	...	1,370	.....	1,370
Mavinkop Tank	...	...	...	4,293	.....	4,293
Doni Reservoir	...	...	...	1,349	.....	1,349
Medleri Tank	...	...	...	66	.....	66
Madag do.	...	...	...	1,334	.....	1,334
Kashmor and Begári Bund	...	...	...	.....	35,199	35,199
Desert Canal	...	...	...	.....	5,431	5,431
Begári do.	...	...	...	.....	49,583	49,583
Kasimpur Bund	...	...	...	.....	723	723
Sind Canal	...	...	...	277	8,200	8,477
Sakhar	...	...	...	483	28,597	29,080
Carried forward	...	...	...	4,97,016	1,29,116	6,26,132

				TOTAL OF EACH STATION.		
				Original Works.	Repairs.	Total.
				Rs.	Rs.	Rs.
Brought forward ...				4,97,016	1,29,116	6,26,132
Ordinary—continued.						
Eastern Nára Works...	...	...	...	8,091	72,947	81,038
Ghár Canal	...	...	...	1,318	48,534	49,852
Western Nára	...	...	...	52	32,180	32,232
Alibhar Kutcherry Canal	...	...	...	.....	2,431	2,431
Marak Canal, Great	...	...	...	.....	3,477	3,477
Serfrazwah, No. XXVIII.	...	...	...	.....	5,979	5,979
Fulaili Canal	...	...	...	7	89,215	89,222
Pinyari do.	...	...	...	5,210	33,023	38,233
Háthmati Canal	...	...	...	608	3,583	4,196
Khári Irrigation Sluices	...	...	...	9	518	527
Pánjhra Canal	...	...	...	220	641	861
Jamda do.	...	...	...	496	3,652	4,148
Palkhair do.	...	...	...	235	1,683	1,918
Warali do.	...	...	...	.....	129	129
Ojhar do.	...	...	...	13	1,163	1,176
Lakh do.	...	...	...	136	2,164	2,300
Bhatodi Tank	...	...	...	.....	582	582
Mutha Canal.	...	...	...	.....	18,744	18,744
Kasurdi Tank	...	...	...	18	133	151
Ekrak do.	...	...	...	.....	7,180	7,180
Rewari Canal	...	...	...	.....	590	590
Yerla do.	...	...	...	.....	547	547
Gondowli Canal	...	...	...	.....	369	369
Maini Tank	...	...	...	.....	596	596
Chikhli Canal	...	...	...	.....	416	416
Krishna do.	...	...	...	83	5,429	5,512
Mavinkop Tank	...	...	...	.....	1,524	1,524
Madag do.	...	...	...	150	1,016	1,166
Shikárpur Collectorate	...	...	...	14,129	7,164	21,293
Begári (Upper Sind Frontier)	...	...	...	402	28,205	28,607
Hyderabad Collectorate	...	...	...	1,426	1,20,809	1,22,235
Kurrachee Collectorate Canals	...	...	...	4,823	53,397	58,220
Guzerat	...	...	...	6	3,214	3,220
Surat	...	...	...	.....	133	133
Khandesh.	...	...	...	1,724	15,931	17,655
Kolába	...	...	...	.....	146	146
Poona	...	...	...	.....	539	539
Ratnágiri...	...	...	...	.....	106	106
Dharwar	...	...	...	2,157	11,219	13,376
Ordinary agricultural works for which no Capital or Revenue Account is kept	...	...	...	—783	1,282	499
Add—Increase under Suspense Balances, and deduct receipts on Capital Account				5,37,546	7,09,711	12,47,257
				12,973	.....	12,973
Establishment				5,50,519	7,09,711	12,60,230
Tools and Plant				.....	.....	4,26,117
				.....	.....	19,360
Total				.....	.....	17,05,707
Grand Total, Irrigation				.....	.....	23,57,552

PROVINCIAL AND FAMINE.

STATEMENT showing the Details of Expenditure of Statement No. IV.

				TOTAL OF EACH CLASS.		
				Original Works.	Repairs.	Total.
				Rs.	Rs.	Rs.
<i>Civil Buildings.</i>						
Revenue	...	...	...	1,43,108	67,042	2,10,150
Customs	...	...	...	1,643	10,399	12,042
Salt	...	...	...	...	124	124
Ecclesiastical	...	...	...	7,513	25,531	33,044
Educational...	...	...	...	1,99,838	13,037	2,12,875
Government-houses and Residences...	...	...	...	46,346	27,936	74,282
Secretariat	...	...	...	9,840	1,927	11,767
Public Works	...	...	...	41	9,777	9,818
Charitable Institutions	...	...	...	37,450	25,237	62,687
Miscellaneous	...	...	...	30,848	14,652	45,500
Police	...	...	...	1,01,014	28,301	1,29,815
Courts	...	...	...	3,68,825	21,704	3,90,529
Jails	...	...	...	1,35,008	24,379	1,59,387
<i>Add—Increase under Suspense Balances</i>				10,81,474	2,70,546	13,52,020
				20,180	...	20,180
Total				11,01,654	2,70,546	13,72,200
<i>Communications.</i>						
Roads, &c.	...	...	...	2,58,701	2,78,987	5,37,688
Bridges	...	...	...	4,30,230	27,804	4,58,034
Total				6,88,931	3,06,791	9,95,722
<i>Miscellaneous Public Improvements.</i>						
Improvements to Towns	...	...	...	302	4,228	4,530
Water-supply	...	...	...	5	2,794	2,799
Harbours and Light-houses	...	...	...	1,989	9,358	11,347
Total				2,296	16,380	18,676
Total Works				17,92,881	5,93,717	23,86,598
„ Establishment	...	...	...	...	...	7,29,415
„ Tools and Plant	...	...	...	...	...	38,180
„ Profit and Loss	...	...	...	...	...	933
Grand Total...				...	...	31,55,126

G. J. MELLISS, Colonel, S.C.,
 Examiner of Public Works Accounts.